

TUNS/TCIS Information Model/ Process Model

Applied Expertise, Inc.

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INFORMATION MODEL/PROCESS MODEL
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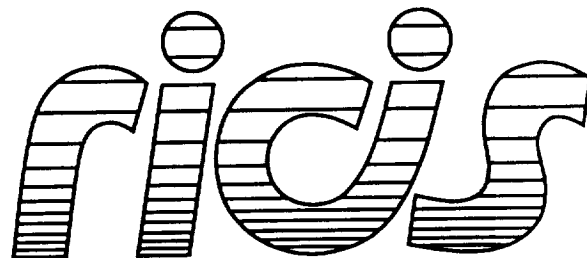
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*Research Institute for Computing and Information Systems
University of Houston-Clear Lake*

TECHNICAL REPORT

RICIS Preface

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TUNS/TCIS INFORMATION MODEL

The Value of the Information Model

During the requirements definition phase of Information System development, a descriptive graphical representation (model) of the system is constructed. The model can be used by database analysts and users alike to derive and communicate requirements for the system under development. This approach to requirements definition is called Information Modeling. It is based on techniques defined by Peter Chen in The Entity Relationship Approach to Logical Database Design and evolved by Sally Shlaer and Stephen Mellor in Object-Oriented Systems Analysis: Modeling the World in Data and by Carlo Batini, Stefano Ceri and Shamkant B. Navathe in Conceptual Database Design: An Entity-Relationship Approach, among others. The Chen approach to Information System requirements definition is widely used today to develop information systems. The Shlaer-Mellor and Batini, Stefano, Navathe methods are an extension of Chen's concepts, with validation and normalization techniques that improve the integrity of the requirements and thus the system. Batini, Stefano, Navathe also offer analysis techniques for the three database type: hierarchical, network and relational. The techniques expressed by these authors have several advantages:

- They consolidate knowledge which is typically dispersed among various groups involved in development and use of the system. Such disparate groups may have conflicting or even overlapping views about data that the system is to process. Information modeling will provide a medium for resolving such conflicts by providing a unified conceptual framework upon which requirements are derived.
- They serve as instruments of communication. In this role, the Information Model exposes the system to the user community and offers a forum to evaluate (dispute or confirm) the data.
- They identify and formalize all of the data that must be processed by the system.
- They provide insight into the effect of impending change on the system, i.e. how will the change to a field in a table affect other tables in the system.

During the requirements definition phase, two such representations will be generated: 1) TUNS Information Model and 2) TCIS Information Model.

Information Model Description

An Information Model is comprised of graphical and textual notation suitable for describing and defining the problem domain -- in our case, TUNS or TCIS. The model focuses on the real world under study. It identifies what is in the problem and organizes the data into a formal structure for documentation and communication purposes.

The Information Model is composed of an Entity Relationship Diagram (ERD) and a Data Dictionary component. The combination of these components provide an easy to understand methodology for expressing the entities in the problem space, the relationships between entities and the characteristics (attributes) of the entities. This approach is the first step in information system development. The Information Model identifies the complete set of data elements processed by TUNS. This representation provides a conceptual view of TUNS from the perspective of entities, data and relationships. The Information Model reflects the business practices and real-world entities that Users must deal with. It has several important uses throughout the requirements definition phase:

- *As a model of the existing system.* In this role, the TUNS Information Model will be used to gain an understanding of TUNS as it exists in its present implementation. The model will serve as a guide to users as they use it to identify requirements, in the form of databases, that have or have not been implemented, and identify requirements that are deemed must haves vs. those that are rarely used and thus become candidates for elimination as TUNS 'old' evolves into a TCIS.
- *To serve as the launching point for deriving requirements* for a new version of the TUNS information system, i.e. TCIS.
- *To provide a model which can be used to critique the TUNS database* and learn from possible mistakes during development of TUNS. This will improve the integrity of new TCIS requirements/databases.

Entity Relationship Diagram (ERD)

The ERD is a graphical representation of the system under development which reveals the information that will be processed in the system. The ERD contains three fundamental objects: entities, attributes and relationships. The ERD has its own notation for representing these objects.

An entity is an abstraction of a set of real-world things that share the same characteristics. An entity is represented on an ERD as a rectangular-shaped box. Each box contains a name, in the form of a noun, which conveys the type of information it represents. An entity is synonymous with a table in a database.

An entity is composed of attributes. An attribute is a single characteristic possessed by an entity which is relevant to the problem space. An entity's attributes are listed on the ERD underneath the entity's name. A horizontal line inside the entity's box separates the name of the entity from a listing of its attributes. In some cases, attributes are annotated to show their usage in the model. An asterisk (*) indicates that the attribute is the unique identifier for the entity. The registered trademark symbol (®) is used to identify the referential attribute which links one entity to another. Attributes are synonymous with fields in a database table.

A relationship is an association that holds between two different kinds of entities. A relationship is modeled on an ERD as a diamond with a line extending from the diamond to the related entities. Arrowheads at the end of the lines point to the entities. A single arrowhead indicates that a single instance of the object may exist for each instance of the association. A double arrowhead indicates that many instances of the object can exist for each instance of the association. The usage of the number "1" and the letter "M" indicate the multiplicity of the relationship. The expression 1:M indicates a one-to-many relationship between two entities. For example a single Contract is awarded to a single Organization, while a single Organization can fulfill many Contracts. The expression M:M indicates a many-to-many relationship between two entities. For example, a single Contract may stimulate many NTRs, while a single NTR may be stimulated by many Contracts.

Data Dictionary and Specifications

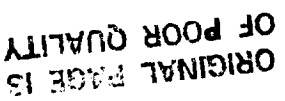
The ERD is augmented by a Data Dictionary which contains a textual description of all the objects on the ERD. The Data Dictionary may be in the form of an alphabetized listing of objects along with their definitions, or it may constitute Entity and Relation Specifications. In either form, a definition is provided for each object on the ERD. Many objects are composed of other objects. For example, entities are composed of attributes. The Data Dictionary provides constructs for representing this concept. As an example, the New Technology (NTR) entity is characterized by its NTR Title and NTR Rating, among

other things. This association is represented in the Data Dictionary under the New Technology entity definition as NTR Title + NTR Rating + etc. Furthermore, a definition of each entity is provided which reflects NASA's work practices.

TCIS Information Model

The TCIS Information Modeling procedure is as follows:

- **Identify Entities:** These may become the tables or databases or records within the database, depending on the implementation architecture.
- **Identify Attributes:** These may become the fields within the tables.
- **Identify Relationships:** This establishes the association between entities, and thus the 'relationality' between tables in the database.
- **Establish the multiplicity among relationships (one-to-many or many-to-many).**
- **Identify Associative Entities** that are postulated based on relationships between entities. Such entities will typically result from many-to-many type relationships, and will be defined during the design stage.
- **Identify Unique Identifiers (keys) and Referential Attributes (foreign keys)**
Referential Attributes tie instances of an entity to instances of another entity.
- **Check integrity of each data item (attribute).**
 Normalize the Attributes.
 Validate referential attributes based 1:M and M:M relationship types.
- **Verify the correctness of the model by comparing it to the reality it is trying to reflect.** This must be done with Users.



FOLDOUT FRAME

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ENTITY SPECIFICATION

DIAGRAMS IN DOCUMENT: TCIS-LOCAL Info Model

DATE: Fri, Oct 16, 1992 1:50 PM

Entity: ContractCorrespondenceLetter

Attributes:

...*ContractCorrespondenceLetterControlNum: The unique identifying number of the Contract Correspondence Letter.

...ContractCorrespondenceLetterDate: The date on which the letter was generated.

...ContractCorrespondenceLetterType: The type of Contract Correspondence Letter. Type may be initial letter, annual letter, completion letter, report reminder letter, item request letter, payment withholding request letter or certification letter.

...ContractCorrespondenceLetterSuspenseDate

...ContractCorrespondenceLetterSuspensionFlwDate: The date the TUO responded with a follow-up letter.

...ContractCorrespondenceLetterFollowUpDate

...ContractCorrespondenceLetterResponseDate: The date on which a response is sent.

...ContractCorrespondenceLetterReportYear: The year of the correspondence.

...ContractCorrespondenceLetterComments: Comments on the letter.

...ContractCorrespondenceLetterBody: Contains the text of the Contract Correspondence Letter.

...@ContractGrantNum: The official number assigned the specific Contract or Grant at the time of award. This attribute is also a referential attribute (foreign key) which formalizes the relationship between the New Technology Report and Contract/Grant entities, between Contract/Grant and Contract Potential Reportable Item, Contract/Grant and Contractor/Grantee, and between Contract/Grant and Contract Correspondence Letter.

Operations:

... Contract Correspondence Letters come in several types (Initial Letters, Annual Letters, Completion Letters, Request for Sp

Entity: ContractGrant

Attributes:

...*ContractGrantNum: The official number assigned the specific Contract or Grant at the time of award. This attribute is also a referential attribute (foreign key) which formalizes the relationship between the New Technology Report and Contract/Grant entities, between Contract/Grant and Contract Potential Reportable Item, Contract/Grant and Contractor/Grantee, and between Contract/Grant and Contract Correspondence Letter.

...ContractGrantAwardDate: The date of award signature for the Contract, or the date the work is to begin for the Grant.

...ContractGrantCompleteDate: The date for the end of the period of performance for the specific contract or grant.

...ContractGrantAmount: The dollar value of the specific contract or grant.

...ContractGrantTitle: A description of the work to be performed under the specific Contract or Grant.

...ContractGrantType: Identifies the entity as a contract or a grant.

...ContractGrantName

...ContractGrantAddress

...ContractGrantDateEntered: The date the record was entered into the database.

...ContractGrantCloseDate: The date the contract or grant was closed by the Technology Utilization Office.

...ContractGrantNTClause: Indicates whether the contract or grant has a new technology clause.

...ContractGrantNTClauseDate: The effective date of the new technology clause

...ContractGrantPRCOClause: Indicates whether there is a Patent Right Retention by the

Contractor clause in the Contract/Grant.

...ContractGrantPRCOClauseDate: Effective date of the Patent Rights Retention by Contractor clause according to the Federal Acquisition Register.

...ContractGrantPatentClause: Indicates whether the contract or grant has a patent rights clause.

...ContractGrantSBIRContract: Indicates whether the contract is a Small Business Innovative Research contract.

...ContractGrantSBIRYear

...ContractGrantSBIRPhase

...ContractGrantFinalNTRReportDate

...ContractGrantFinalNTRReportApprvlDate: The date the final Contractor/Grantee report is approved by the TUO.

...ContractGrantCloseOut

...ContractGrantCntctOffcrName: Contract Officer's full name.

...ContractGrantCntctOffcrMailCode: Contract Officer's mail code.

...ContractGrantTechRepName: Contract/Grant technical representative's full name.

...ContractGrantTechRepMailCode: Contract/Grant technical representative's mail code.

...ContractGrantTechRepWorkDivision: Contract/Grant technical representative's work division.

...ContractGrantPointOfContactName: Contract/Grant contact person's name.

...ContractGrantPointOfContactPhone: Contract/Grant contact person's phone number.

...ContractGrantInitialLettersFlag: Indicates whether the program should generate an initial letter at the start of the contract/grant.

...ContractGrantInterimReportFlag: Indicates whether to generate a reminder-for-interim-report letter.

...ContractGrantCompletionLetterFlag: Indicates whether to generate a compliance letter or certification letter.

...ContractGrantSpecificItemsFlag: Indicates that the program should generate a Request for Specific Items letter.

...ContractGrantFinalReportReminder: Indicates whether to generate a letter reminding the Contractor/Grantee to submit a final report to the TUO.

...ContractGrantAnnualToTRCOFlag

...ContractGrantWthldngLetterFlag

...ContractGrantCertificationFlag

...@OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.

...@NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology Report and Technology Utilization Project.

Operations:

...

Entity: ContractPotentialReportableItem

Attributes:

...*CPRINum: The unique identifier for the Contract Potential Reportable Item (CPRI). It is also a referential attribute which formalizes the relationship between CPRI and New Technology Report.

...CPRIReportDate: The date the Contract Potential Reportable Item was reported by the Contracting Officer's technical representative.

...CPRITitle: The title of the Contract Potential Reportable Item.

...CPRILetterDate: Contains the date of the Contract Potential Reportable Item letter.

...CPRILetterType: Identifies the type of letter generated under the Contract Potential Reportable Item.

...CPRILetterGenerated: Indicates which CPRI letter is to be generated.

...@ContractGrantNum: The official number assigned the specific Contract or Grant at the time of award. This attribute is also a referential attribute (foreign key) which formalizes the relationship between the New Technology Report and Contract/Grant entities, between Contract/Grant and Contract Potential Reportable Item, Contract/Grant and Contractor/Grantee, and between Contract/Grant and Contract Correspondence Letter.

...@NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology Report and Technology Utilization Project.

Operations:

...

Entity: Innovator

Attributes:

...*InnovatorCode: The unique identifier for the Innovator entity. This attribute is also a referential attribute which formalizes the relationship between the New Technology and Innovator entities and between Organization and Innovator.

...InnovatorName: The name of the Innovator.

...InnovatorAddress: The Innovator's address.

...InnovatorPhoneNum: The Innovator's phone number.

...@NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology Report and Technology Utilization Project.

...@OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.

Operations:

...

Entity: NewTechnologyReport

Attributes:

...*NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology Report and Technology Utilization Project.

...NTRTitle: A descriptive title assigned the new technology.

...NTRDscrptn: A textual description of the innovative technology.

...NTROrigin: Origin of the NTR, e.g. primary contractor, subcontractor, NASA in-house, joint NASA-Contract/Grantee, multiple.

...NTRRatingClass: A rating given New Technology for its innovative qualities and its applicability to industry.

...NTRRelease: Indicates whether the New Technology should be released to Central, IACs or clients.

...NTRDate: The official date of the NTR.

...NTR evaluator: Indicates whether the evaluator of the New Technology is COSMIC or SRI.

...NTRDateToEvaluator: Date the NTR was sent to the evaluation agency.

...NTRDateToInnovator: Date the NTR was sent to the Innovator for review.

...NTRPatentStatus: Indicates the patent status of the New Technology.

...NTRInnovationAbstract: Contains an abstract of the Innovation of the New Technology.

...NTRTechBrief: Contains the publication number, volume, page number and date of the Technical Publication in which the NTR appears.

...NTRDvlpmntState: Indicates the New Technology's current stage of development.

...NTRKeywords: Key Words from the NTR title or description.

...NTRPreparerName: The initials of the preparer of the NTR report.

...NTRPublishDcsn: Indicates a decision to publish the NTR.

...NTRPublicationData

...NTRContractVrfctn: Indicates that verification of the contract number is required.

...NTRTrackingPreparerName: The name of the individual responsible for tracking the NTR.

...NTRTrackingPatentOffcRvwDate: The date the Patent office is sent the NTR for initial review.

...NTRTrackingPatentOffcRspnsDate: The date the response to an NTR is received from the Patent office.

...NTRTrackingSRICosmicSendDate: The date the NTR is sent to SRI/COSMIC.

...NTRTrackingSRICosmicRtnDate: The date the NTR is returned from SRI/COSMIC.

...NTRTrackingSRICosmicAddtnlInfoDate: Contains the date additional information is sent to SRI/COSMIC.

...NTRTrackingSRICosmicReEvalRcvDate: The date SRI/COSMIC re-evaluation is received.

...NTRTrackingSRICosmicReClass: Contains the re-classification code (1 thru 4) based on a re-evaluation of the New Technology. A re-evaluation is due to additional information about the New Technology.

...NTRTrackingCosmicLibRemoveDate: The date the NTR is removed from the COSMIC library.

...NTRTrackingCosmicTechBriefDate: The date the Tech Brief is received from COSMIC.

...NTRTrackingInnovatorNotfctnDate: The date the Innovator is notified of the NTR receipt by the TUO.

...NTRTrackingTTANotfctnDate: The date the Technical Transfer Agent is notified.

...NTRTrackingReconNum: Contains the Recon number of the NTR.

...NTRTrackingTUORcvDate: Date the NTR is first received by the TUO.

...NTRTrackingPubRqstDate

...NTRTrackingTBTWICTDate

...NTRTrackingFinalTBICDate: Date the final draft Tech Brief is sent to ICT for review.

...NTRTrackingTSPStartDate: Date work begins on the Technical Support package.

...NTRTrackingDateFromEvaluator: Date the NTR is received from the evaluator.

...NTRTrackingTUOReturnDate

...NTRTrackingSRICOSMICClassfctn

...NTRTrackingFinalClassfctnDate: Date of TUO's final classification based on evaluation and review of evaluation by Innovator.

...NTRTrackingPubRqstCntctDate: Date of request to Contractor for a decision on publication.

...NTRTrackingTBInnovatorDate: Date initial Tech Brief draft is submitted to Innovator for review, and date it is returned from Innovator.

...NTRTrackingCameraCopyDate

...NTRTrackingTSPAvail: Date the Technical Support package is available to the public.

...NTRTrackingPubRqstPatentOffcDate: Date a request is made of the patent office for a decision on publishing.

...NTRTrackingPubRqstDcsnPatentOffcDate

...NTRTrackingPROClause: Indicates whether there is a PRO clause in the NTR.

...NTRTrackingPatentRghtsWaive

...NTRTrackingContrRetainPatentRights: Whether the Contractor elected to retain patent rights or waive them to NASA.

...NTRTrackingPubRqstToContrDate

...NTRTrackingPubDcsnFrContrDate: Date of the publishing decision from the Contractor.

...@CPRINum: The unique identifier for the Contract Potential Reportable Item (CPRI). It is also a referential attribute which formalizes the relationship between CPRI and New Technology Report.

...@ContractGrantNum: The official number assigned the specific Contract or Grant at the time of award. This attribute is also a referential attribute (foreign key) which formalizes the relationship between the New Technology Report and Contract/Grant entities, between Contract/Grant and Contract Potential Reportable Item, Contract/Grant and Contractor/Grantee, and between Contract/Grant and Contract Correspondence Letter.

...@InnovatorCode: The unique identifier for the Innovator entity. This attribute is also a referential attribute which formalizes the relationship between the New Technology and Innovator entities and between Organization and Innovator.

...@TechnologyUtilizationProjectID: The unique identifier assigned to the Technology Utilization Project. Also a referential attribute which formalizes the relationship between Technology Utilization Project and New Technology Report.

...@SpaceBenefitsNum: The unique identifier for the Space Benefit. It is also a referential attribute which formalizes the relationships between Space Benefits and New Technology Report, and between Space Benefits and Organization.

Operations:

... New Technolog

Entity: Organization

Attributes:

...*OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.

...OrganizationTitle: The title of the Organization.

...OrganizationSection: The name of the section within the Organization.

...OrganizationBranch: The name of the branch within the Organization.

...OrganizationDivision: The name of the division within the Organization.

...OrganizationType: Identifies the Organization as a contractor, grantee, employer or consumer of New Technology.

...OrganizationMailCode: The mail code of the Organization.

...@SpaceBenefitsNum: The unique identifier for the Space Benefit. It is also a referential attribute which formalizes the relationships between Space Benefits and New Technology Report, and between Space Benefits and Organization.

...@InnovatorCode: The unique identifier for the Innovator entity. This attribute is also a referential attribute which formalizes the relationship between the New Technology and Innovator entities and between Organization and Innovator.

Operations:

... Such institution may be industrial centers, universities, government agencies contractors, grantees or employers. All are producers or consumers of new technology.

Entity: ResearchTechnologyResume

Attributes:

...*RTRNum: The unique identifier for the Research and Technology Resume (RTR). This attribute is also a referential attribute which formalizes the relationship between the Research and Technology Resume and RTOP entities.

...RTRTitle: The title of the Research Technical Resume (RTR).

...RTRRfrmcNotes: Contains any reference notes that apply to the Research Technical Resume (RTR).

...RTRDscrpntn: A technical description of the Research Technical Resume.

...RTRDatePrepared

...RTRFiscalYear

...@OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.

...@RTOPNum: The unique identifying number of the RTOP. This attribute is also a referential attribute which formalizes the relationship between the RTOP and Technology Utilization Project entities. This attribute also links the RTOP and Research and Technology Resume entities.

Operations:

... RTRs assist in tracking In-House Potential New Technologies.

Entity: RTOP

Attributes:

...*RTOPNum: The unique identifying number of the RTOP. This attribute is also a referential attribute which formalizes the relationship between the RTOP and Technology Utilization Project entities. This attribute also links the RTOP and Research and Technology Resume entities.

...RTOPSubject: Contains the subject matter of the Research Technology Objective and Plan.

...RTOPTitle: The title of the RTOP.

...RTOPAccessionNum: The number used to sequentially assign RTOPS within the summary report.

...RTOPOrganization: The NASA organization responsible for the RTOP.

...RTOPAbstract: A short descriptive summary of the RTOP.

...RTOPContactName: The name of the individual who may be contacted regarding the RTOP.

...RTOPContactPhoneNum: The phone number of the individual who may be contacted regarding the RTOP.

Operations:

...

Entity: SpaceBenefits

Attributes:

...*SpaceBenefitsNum: The unique identifier for the Space Benefit. It is also a referential attribute which formalizes the relationships between Space Benefits and New Technology Report, and between Space Benefits and Organization.

...SpaceBenefitsTitle: The title of the Space Benefit.

...SpaceBenefitsSummary: Contains a summary of the Space Benefit.

...SpaceBenefitsNature: Identifies the category or characteristics of the Space Benefit. Such characteristics include new or improved products, processes, material.

...SpaceBenefitsRevenue: An indication of the effect of the Space Benefit on revenue, typically whether the effect is an increase.

...SpaceBenefitsCost: An indication of the effect of the Space Benefit on cost, typically the amount of cost reduction.

...SpaceBenefitsCompanyName: The name of the company which has benefited from the new technology.

...SpaceBenefitsCompanyAddr: Contains the address of the company that is the beneficiary of the Space Benefit.

...SpaceBenefitsCompanyPhoneNum: The telephone number of the company which has benefited from the new technology.

...SpaceBenefitsContactPerson: The name of the contact person at the company which has benefited from the new technology.

...SpaceBenefitsTypeBenefit: The list of financial and/or technological gains that the new product, service or process has experienced as a result of the new technology.
 ...SpaceBenefitsPatent: The patent number assigned to the benefit. Also contains the patent date.
 ...SpaceBenefitsTechAsstnce: The technological assistance provided by the company whose product(s) benefitted from the new technology.
 ...SpaceBenefitsTotalValue: The amount of the total value of the benefit.
 ...SpaceBenefitsInvestment: The amount of the total investment in the Space Benefit.
 ...SpaceBenefitsKeyWords: Contains technical terms associated with the benefit.
 ...SpaceBenefitsSource: NASA source information or the benefit report source (e.g. NTR#, COSMIC#, TB#, STAR#, etc).
 ...SpaceBenefitsLitryRfrnce: The literature references associated with the Space Benefit.
 ...SpaceBenefitsInfoCntntRev: An indication of whether the information was reviewed by the company.
 ...SpaceBenefitsCorpReleaseApprvlDt: An indication of whether corporate release approval was granted the Space Benefit.
 ...SpaceBenefitsAuthority: The name of the corporate authority who has ultimate responsibility for the product/service which has profitted from the Space Benefit.
 ...SpaceBenefitsProprietaryData: An indication of whether the Space Benefit should be considered proprietary and not released.
 ...SpaceBenefitsUserType: The classification of the user of the New Technology, i.e. whether the user is a private citizen, local or state government, US Federal government, education organization, non-profit company, foreign/international business or business organization.
 ...SpaceBenefitsBusinessType: The type of business (Minority-owned, Female-owned, Small Business, Disadvantaged, Section 8A) which benefitted from the New Technology.
 ...SpaceBenefitsEmployeeNum: The approximate number of employees who work for the organization claiming the Space Benefit.
 ...SpaceBenefitsSICNum: The Standard Industrial Code (SIC) number for the Organization reporting Space Benefits.
 ...SpaceBenefitsUserLocation: Contains the name of the user's state, county, city, Economic Development Area, Standard Metropolitan Statistical Area, Congressional District.
 ...SpaceBenefitsFirstNASACntct: Contains the NASA contact code (SPINOFF, Tech Brief, COSMIC catalogue, etc).
 ...SpaceBenefitsReferral: Contains the referral code of the NASA organization.
 ...SpaceBenefitsNotes: Contains notes relating to the Space Benefit's financial information, company investment, type of user, geographic statistics or NASA referrals.
 ...SpaceBenefitsUseNASAAgain: An indication of whether the reporting organization would be inclined to use NASA again as a source of New Technology.
 ...SpaceBenefitsReleaseToCentral
 ...SpaceBenefitsReleaseDate
 ...SpaceBenefitsSpinOffReference
 ...SpaceBenefitsLocalBenefitNumber
 ...SpaceBenefitsPatentDate
 ...SpaceBenefitsReportSource
 ...SpaceBenefitsReleaseApprvlAuthrtyPhone
 ...@OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.
 ...@NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology

Report and Technology Utilization Project.

Operations:

... Such benefits are derived from New Technology which is the result of contracts awarded by NASA or research performed by NASA. Space Benefits provide a means of uniform, continuous inform

Entity: TechnologyUtilizationProject

Attributes:

...*TechnologyUtilizationProjectID: The unique identifier assigned to the Technology Utilization Project. Also a referential attribute which formalizes the relationship between Technology Utilization Project and New Technology Report.

...TechnologyUtilizationProjectTopic: Contains the topic or category under which the Technology Utilization Project falls.

...TechnologyUtilizationProjectTitle: The official title of the Active Project.

...TechnologyUtilizationProjectAbstract: A description of the nature of the Active Project.

...TechnologyUtilizationProjectCenterName: The name of the center responsible for the project.

...TechnologyUtilizationProjectTUOName: The name of the Technology Utilization Officer at the center which is implementing the Active Project.

...TechnologyUtilizationProjectPhoneNum: The telephone number of the center which is responsible for implementing the Active Project.

...TechnologyUtilizationProjectFundStatus: The current state (planning, analysis, design, implementation, test, maintenance, etc.) of the active project.

...TechnologyUtilizationProjectNASAFund: Contains the cumulative amount of NASA funding for the Technology Utilization Project.

...TechnologyUtilizationProjectProblems: Contains a synopsis of the problem that was solved by the New Technology item.

...TechnologyUtilizationProjectAccmplshmnt: Notes which inform the Project Manager of the Technology Utilization Project's status.

...TechnologyUtilizationProjectActvtsPlan: A description of the planned activities for the next quarter.

...TechnologyUtilizationProjectFsbltyStdy: Contains the planned and actual dates of the Feasibility Study.

...TechnologyUtilizationProjectCntrctAwdDat: Contains the planned and actual dates of Contract award.

...TechnologyUtilizationProjectPrtypDevDate: Contains the planned and actual dates of the Prototype development.

...TechnologyUtilizationProjectOptmztnDate: Contains the planned and actual dates of the Hardware or Software optimization.

...TechnologyUtilizationProjectFldLabDate: Contains the planned and actual dates of the Field/lab demonstration/implementation.

...TechnologyUtilizationProjectFinalRprtDat: Contains the planned and actual dates of the Final Report.

...TechnologyUtilizationProjectCmrclztnDate: Contains the planned and actual dates of the commercialization.

...TechnologyUtilizationProjectCmpltDate: The actual date of project completion.

...TechnologyUtilizationProjectFundingFY

...TechnologyUtilizationProjectTechnCntct

...TechnologyUtilizationProjectDateLstChngd

...TechnologyUtilizationProjectReleaseCntrl

...TechnologyUtilizationProjectDteToCentral

...TechnologyUtilizationProjectStatusAsOfDt

...TechnologyUtilizationProjectApprvdStrtDt

...TechnologyUtilizationProjectOtherFunds

...@RTOPNum: The unique identifying number of the RTOP. This attribute is also a referential

attribute which formalizes the relationship between the RTOP and Technology Utilization Project entities. This attribute also links the RTOP and Research and Technology Resume entities.

...@OrganizationCode: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.

...@NTRControlNum: The unique identifying number assigned to the New Technology Report. This attribute is also a referential attribute which formalizes the relationship between the New Technology Report and Contract Potential Reportable Item entities. Likewise, it formalizes the relationships between the New Technology Report and Space Benefits, New Technology Report and Contract/Grant, New Technology Report and Innovator, and between New Technology Report and Technology Utilization Project.

Operations:

... Information can be obtained about such projects to facilitate rapid transfer of new information and assist all Technology Utilization members in remaining alert

RELATION SPECIFICATION
DIAGRAMS IN DOCUMENT: TCIS-LOCAL Info Model
DATE: Fri, Oct 16, 1992 2:00 PM

Relation: AreExperiencedBy

Organization, SpaceBenefitsDefinition:

Space Benefits are experienced by Organizations. A single Organization can benefit from one or more Space Benefits, while a single Space Benefit can be experienced by one or more Organizations.

Relation: AreTheResultOf

NewTechnologyReport, SpaceBenefitsDefinition:

A New Technology Report can result in zero, one or many Space Benefits, while a single Space Benefit can benefit from several New Technologies. This relationship is M:M, and is reflected in the model by the key identifier and referential attributes NTRControlNum and SpaceBenefitRecordNum. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between Space Benefits and New Technology. This new entity will contain the unique identifiers from both Space Benefits and New Technology, along with any additional attributes of the relation.

Relation: Become

NewTechnologyReport, ContractPotentialReportableItemDefinition:

Contract Potential Reportable Items may become New Technology Reports (NTRs). This is a 1:M relationship, in that a single Contract Potential Reportable Item may become zero, one or more NTRs, while a single NTR is derived from a single Contract Potential Reportable Item.

Relation: Contains

RTOP, ResearchTechnologyResumeDefinition:

A Research Technology Objective and Plan (RTOP) consists of Research Technical Resumes (RTR). A single RTOP can have one or more RTRs, while a single RTR can be part of only one RTOP.

Relation: Evolves

NewTechnologyReportDefinition:

New Technology Reports evolve from Technology Utilization Projects. This relationship is M:M in that single Technology Utilization Project can evolve several NTRs, while a single Technology Utilization Project can produce several NTRs.

Relation: Identifies

RTOP, TechnologyUtilizationProjectDefinition:

Research Technology Objectives and Plans (RTOPs) identify Technology Utilization Projects. An RTOP can identify several Technology Utilization Projects, while a single Technology Utilization Project can be identified by a single RTOP. This is a 1:M relationship and is formalized by the referential attribute RTOPNum located in the Technology Utilization Project entity.

Relation: IsAffiliatedWith

Organization, InnovatorDefinition:

Innovators are affiliated with Organizations where they conduct their search for new technology. A single Innovator can be affiliated with none, one or several Organizations, while a single Organization can have several Innovators.

Relation: IsAwardedTo

ContractGrant, OrganizationDefinition:

Contracts and Grants are awarded to Organizations. A single Organization can fulfill many Contracts or Grants, although a single Contract or Grant can be awarded to only one Organization. This is a 1:M relationship and is formalized by the referential attribute OrganizationCode located in the Contract/Grant entity.

Relation: IsDevelopedBy

Innovator, NewTechnologyReportDefinition:

A single New Technology Report is developed by one or more Innovators, while a single Innovator can develop several New Technology Reports. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between Innovator and New Technology. This new entity will contain the unique identifiers from both Innovator and New Technology, along with any additional attributes of the relation.

Relation: IsResponsibleFor

TechnologyUtilizationProject, OrganizationDefinition:

Organizations are responsible for Technology Utilization Projects. A single Organization can guide one, two or several Technology Utilization Projects, while a single Technology Utilization Project can be guided by only one organization, which has overall responsibility for the Project.

Relation: RequiresReportsOn

ContractPotentialReportableItem, ContractGrantDefinition:

Contracts or Grants require that potential reportable new technologies be reported. A single Contract or Grant can require that several Contract Potential Reportable Items be reported, while a single Contract Potential Reportable item is authorized for reporting by a single Contract or Grant.

Relation: RequiresTransmittalOf

ContractCorrespondenceLetter, ContractGrantDefinition:

Contracts or Grants require periodic or as-needed transmittal of Contract Correspondence Letters. This is a 1:M relationship, i.e., a single Contract or Grant requires transmittal of several Contract Correspondence Letters, while a single Contract Correspondence Letter may be required by only one specific Contract or Grant.

Note: All letters, except the Initial letters at the beginning of the Contract/Grant and the Certification letter, may be issued several times during the life of a single Contract/Grant. Further, follow-up letters, when applicable, may also be issued several times during the life of a single Contract/Grant for all Contract/Grant letters except the Initial and Certification letters.

Relation: Stimulate

NewTechnologyReport, ContractGrantDefinition:

Contracts and Grants issued to universities, non-profit organizations and corporations can stimulate New Technology Reports. This relationship is modeled as a M:M relationship; i.e. a single Contract or Grant can stimulate zero, one or several New Technology Reports, while a single New Technology Report can be stimulated by one or more Contracts or Grants. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between ContractGrant and New Technology. This new entity will contain the unique identifiers from both ContractGrant and New Technology, along with any additional attributes of the relation.

Relation: Writes

ResearchTechnologyResume, OrganizationDefinition:

Organizations write Research Technical Resumes to obtain funding for Technology Utilization Projects. A single Organization may write several Research Technical Resumes, while a single

Research Technical Resume can be written by only one Organization. This is a 1:M relationship and is formalized by the referential attribute OrganizationCode located in the Research Technical Resume entity.

The PROCESS MODEL

The Purpose of the Process Model

The Process Model defines the data processing requirements within TCIS. The model is based on functional or structured analysis techniques documented in Structured Analysis and System Specification by Tom DeMarco, Structured Systems Analysis: Tools and Techniques by Chris Gane and Trish Sarson, and Modern Structured Analysis by Edward Yourdon. The structured analysis methodology has become the defacto standard for expressing and deriving data processing requirements for computer systems. Its purpose is to create a set of processing requirements that are unambiguous and easy to communicate to the user community.

Structured analysis is concerned with modeling a system in terms of processes and information flows between them. The resultant model is a representation of database applications, the interactions between applications, and the database itself. The process model defines the processing performed on the data identified on the Entity Relationship Diagram (ERD).

Process Model Description

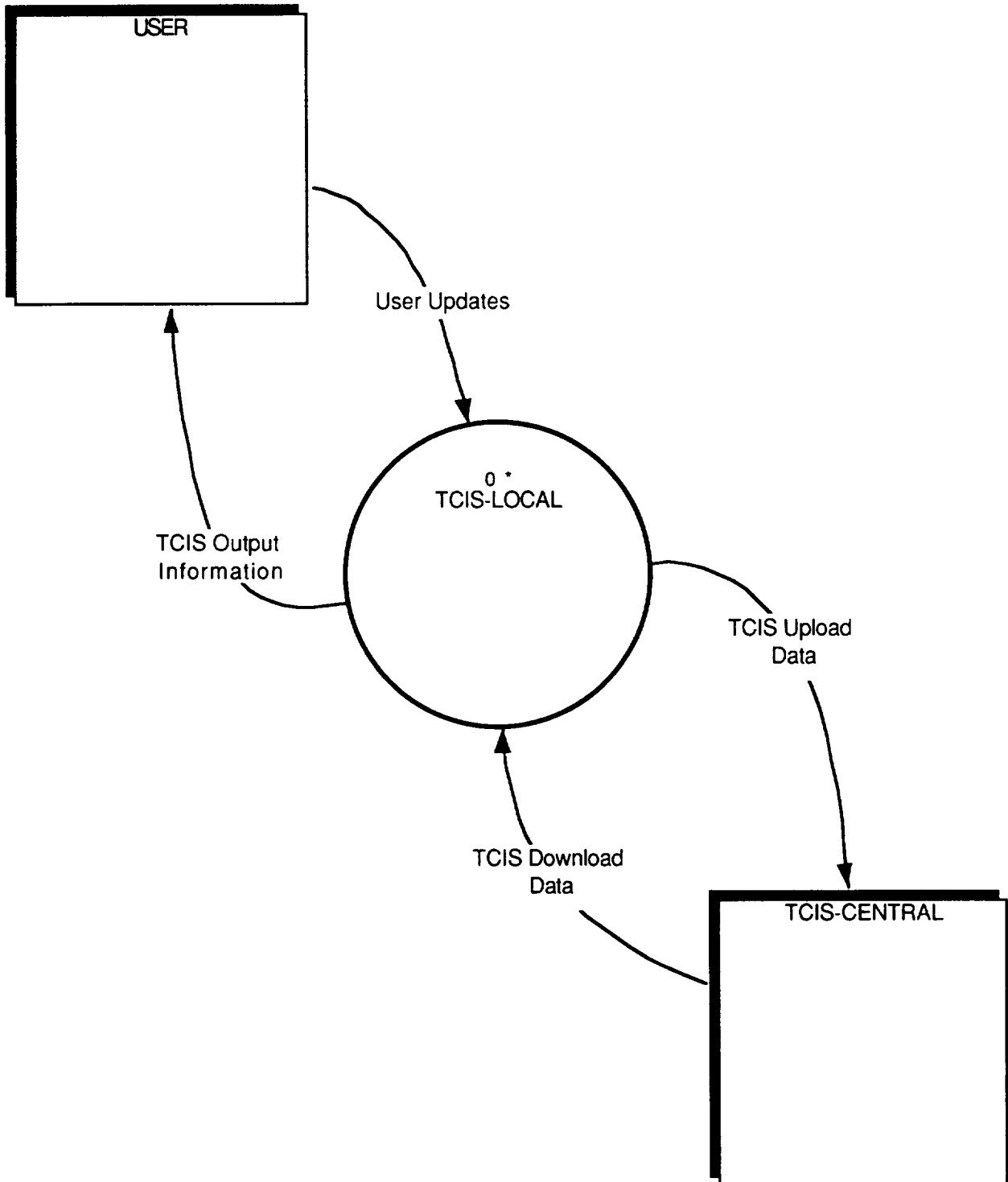
The structured analysis methodology provides its own graphical notation for representing data processing, interfaces and databases. This notation is called the data flow diagram (DFD). DFDs display the system as a network of functions connected by interfaces. A DFD is composed of the following:

- A **process** represents an activity within an information system which uses, generates, manipulates, destroys or otherwise transforms data in the incoming flows into the data in the outgoing flows. A process is represented on a DFD as a circle or ellipse containing the name of the process.
- A **data flow** represents exchange of information between processes, between processes and data stores, or between processes and external entities. This exchange of information indicate discrete packets of data that flow into or out of processes, data stores or external entities. Data flows are represented on the DFD by named lines with arrowheads. The arrowheads indicate the direction of data flow.

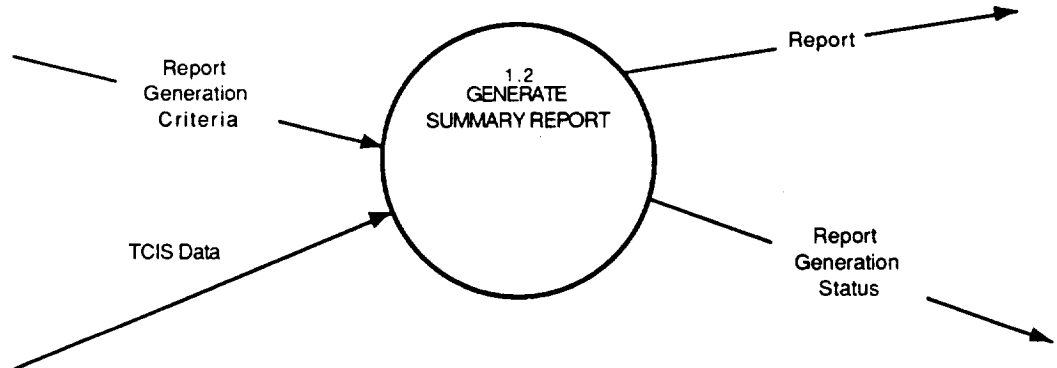
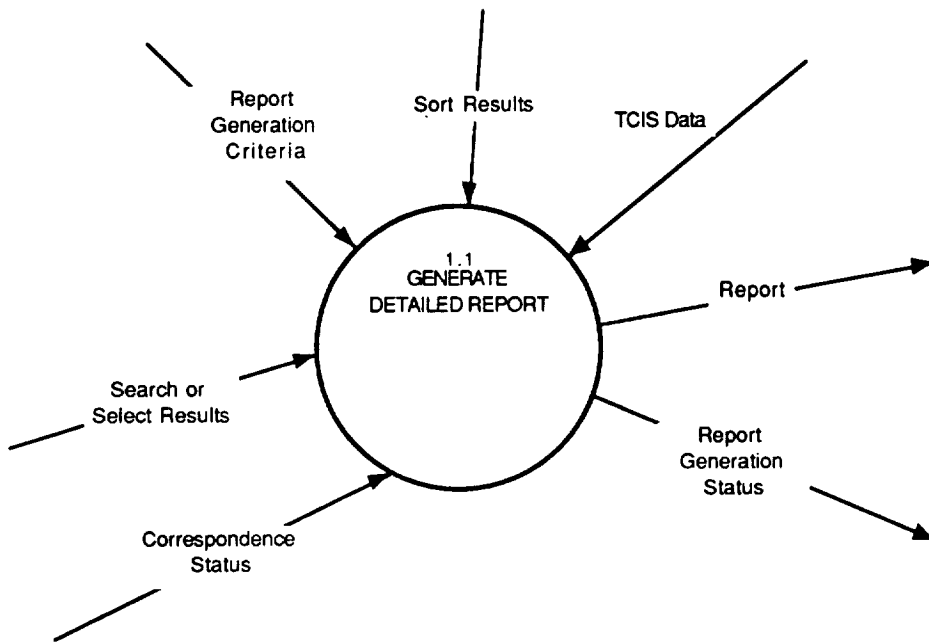
- An *external entity or terminator* is an object outside the boundaries of the system which provides data to or uses information from a process. An external entity is represented by a box or rectangle containing the name of the entity.
- A *data store* is a repository of information. Data stores are represented by two horizontal lines with the name of the data store between the lines. A line from a data store to a process indicates that data from the store is used by the process; a line from a process to a data store means that the process in some way changes the content of the store.

A Data Dictionary provides definitions for each process, data flow, external entity and data store on the DFD. Processes are defined in terms of input, output and what transformations occur inside the process. Data flows and data stores are defined in terms of their information content. An external entity is defined in terms of the data it transmits to a process or the data it receives from a process.

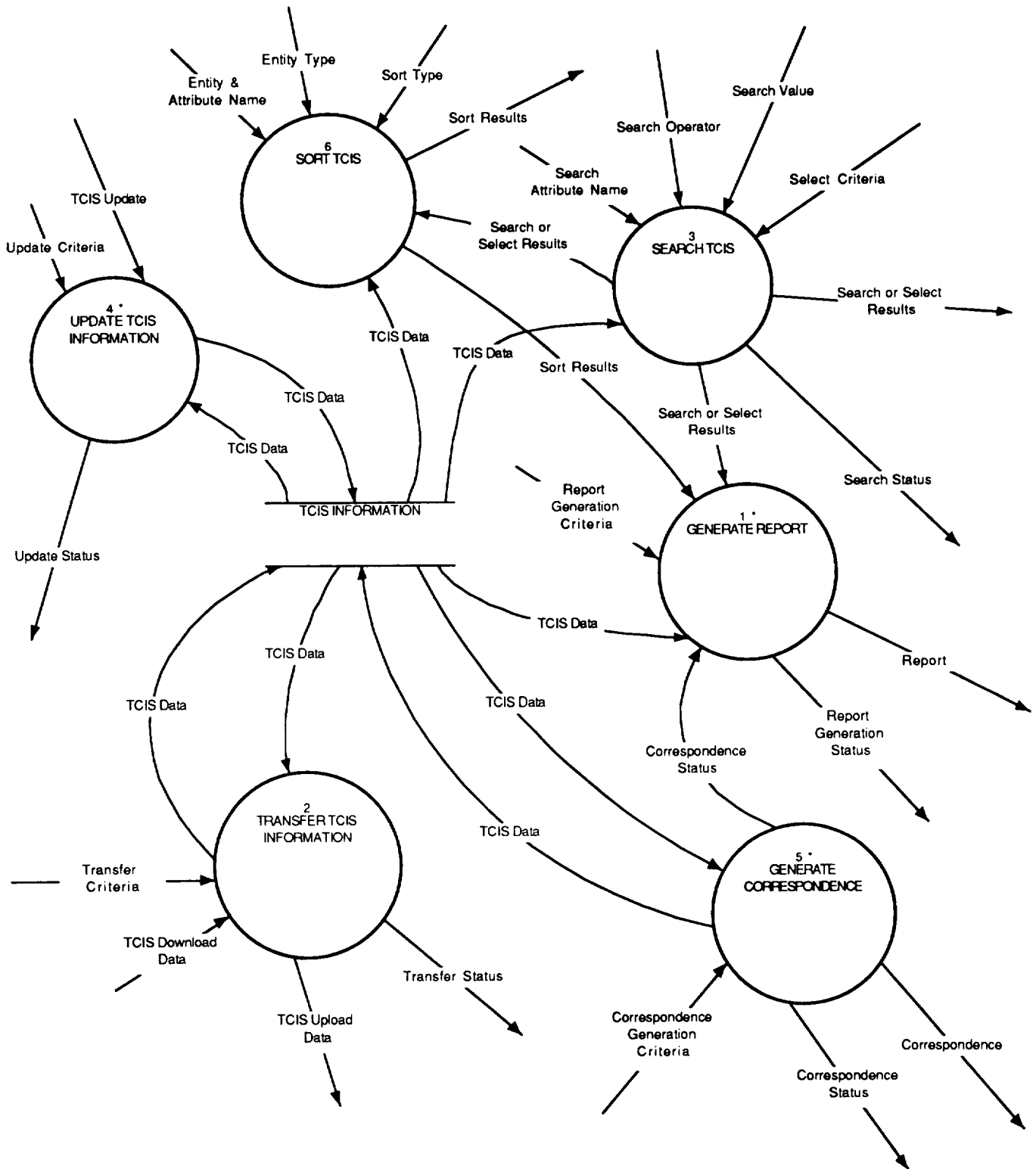
TCIS-LOCAL CONTEXT DIAGRAM



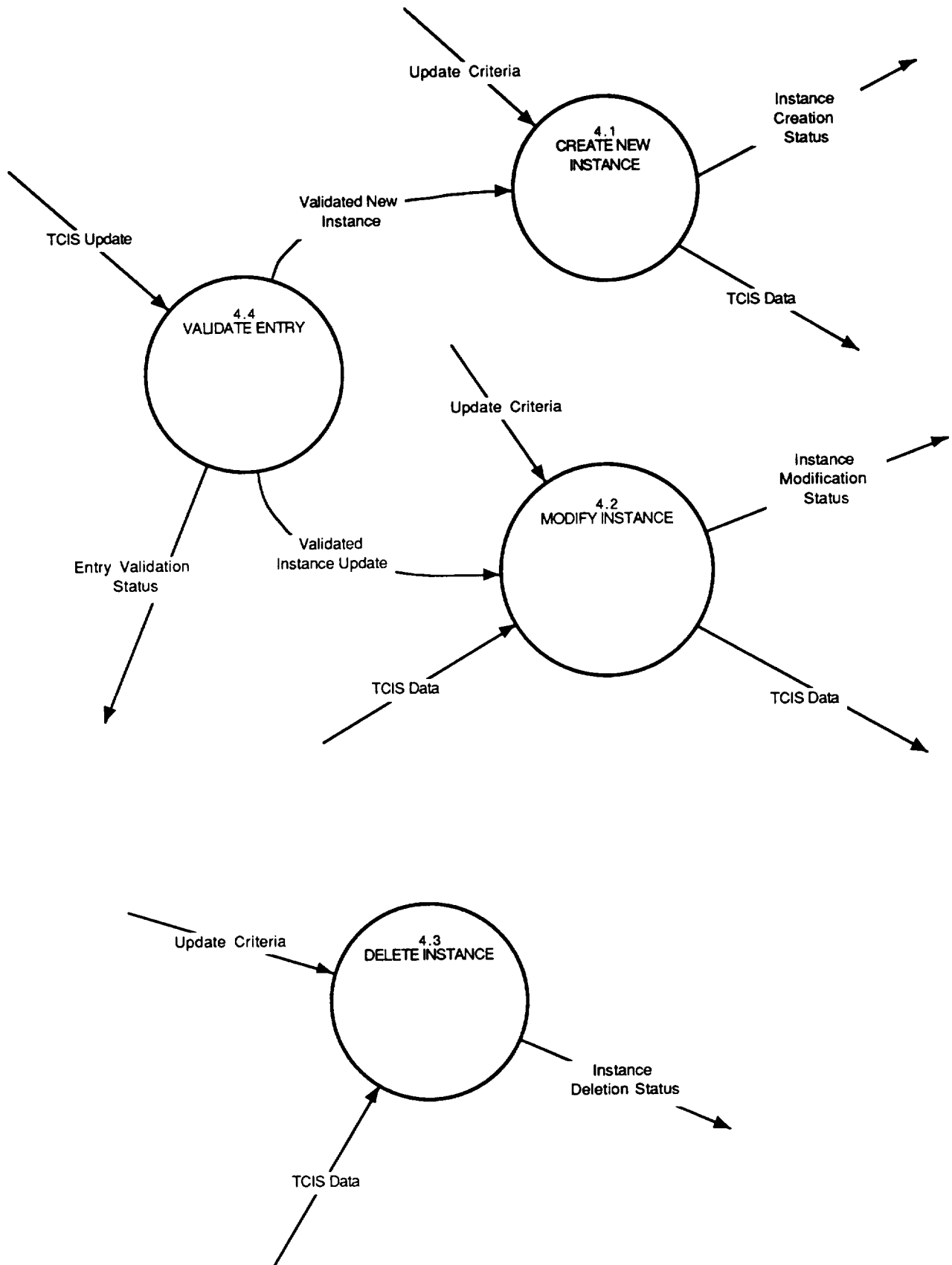
GENERATE REPORT
DF 1



TCIS-LOCAL DATA FLOW DIAGRAM Level 0

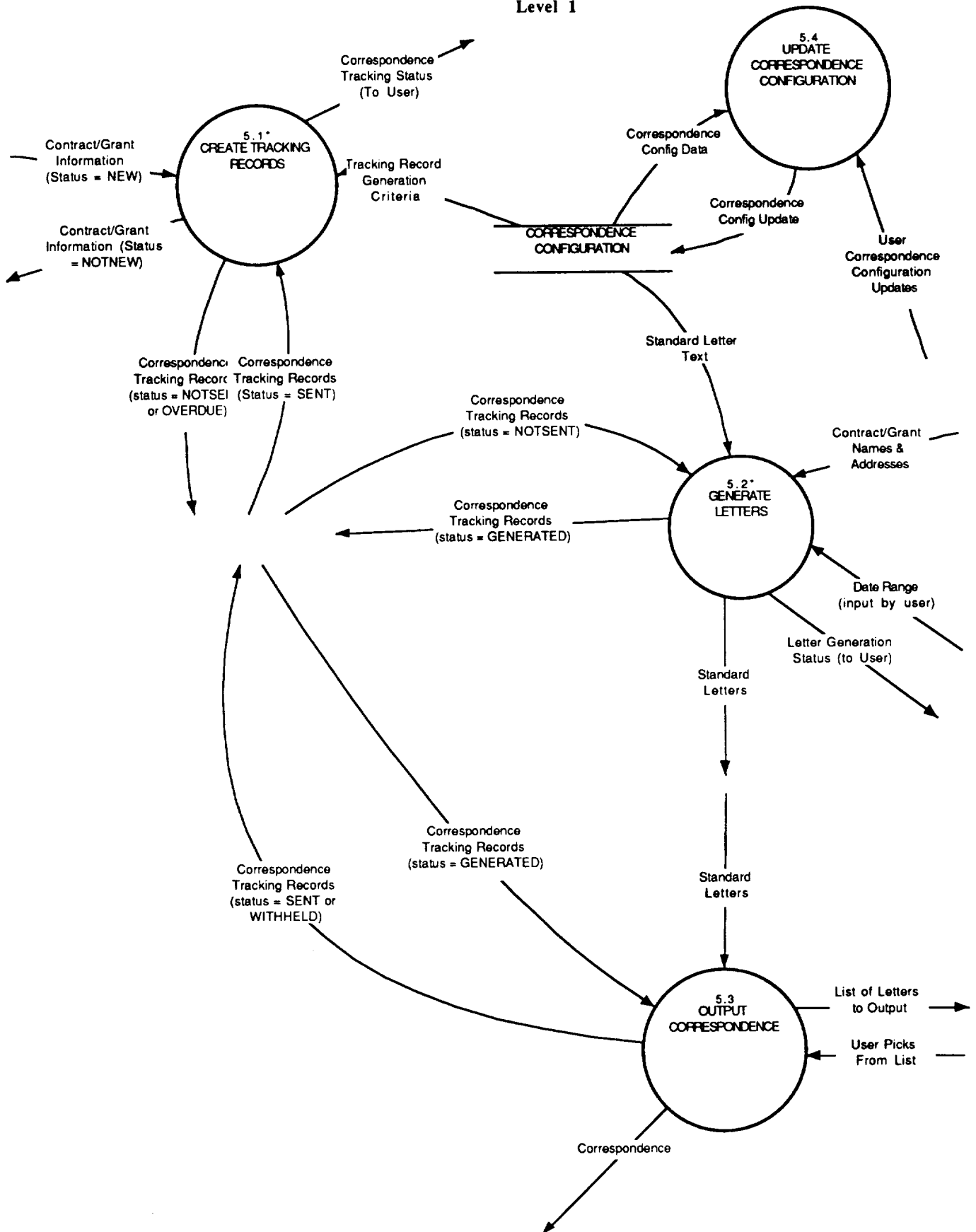


UPDATE TCIS INFORMATION DF 4



TCIS-LOCAL DATA FLOW DIAGRAM 5

Level 1



DICTIONARY ENTRIES: TCIS-LOCAL Data Dictionary

ENTRIES: 438

DATE: Thu, Oct 15, 1992 4:21 PM

ANALYSIS: TCIS Process Model

ERD: TCIS-LOCAL Info Model

NAME: AreExperiencedBy

COMPOSITION:

DEFINITION: Space Benefits are experienced by Organizations. A single Organization can benefit from one or more Space Benefits, while a single Space Benefit can be experienced by one or more Organizations.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: AreTheResultOf

COMPOSITION:

DEFINITION: A New Technology Report can result in zero, one or many Space Benefits, while a single Space Benefit can benefit from several New Technologies. This relationship is M:M, and is reflected in the model by the key identifier and referential attributes NTRControlNum and Space BenefitRecordNum. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between Space Benefits and New Technology.

This new entity will contain the unique identifiers from both Space Benefits and New Technology, along with any additional attributes of the relation.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: Become

COMPOSITION:

DEFINITION: Contract Potential Reportable Items may become New Technology Reports (NTRs). This is a 1:M relationship, in that a single Contract Potential Reportable Item may become zero, one or more NTRs, while a single NTR is derived from a single Contract Potential Reportable Item.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: Contains

COMPOSITION:

DEFINITION: A Research Technology Objective and Plan (RTOP) consists of Research Technical Resumes (RTR). A single RTOP can have one or more RTRs, while a single RTR can be part of only one RTOP.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: ContractCorrespondenceLetter

COMPOSITION: *ContractCorrespondenceLetterControlNum +

ContractCorrespondenceLetterDate + ContractCorrespondenceLetterType +

ContractCorrespondenceLetterSuspenseDate +

ContractCorrespondenceLetterSuspnsFlwDate +

ContractCorrespondenceLetterFollowUpDate +

ContractCorrespondenceLetterResponseDate +

ContractCorrespondenceLetterReportYear + ContractCorrespondenceLetterComments +

ContractCorrespondenceLetterBody + @ContractGrantNum

DEFINITION: A Contract Correspondence Letter is correspondence related to New Technology or patent rights administration of Contracts or Grants. Contract Correspondence Letters come in several types (Initial Letters, Annual Letters, Completion Letters, Request for Specific Items Letters, Reminder for Final Report Letters, Request for Withholding of Payment Letters and Certification Letters). They are issued periodically throughout the course of the contract to communicate contract administration information.

REFERENCES: ERD(ENTITY) TCIS-LOCAL Info Model

NAME: ContractCorrespondenceLetterBody

COMPOSITION:

DEFINITION: Contains the text of the Contract Correspondence Letter.

REFERENCES:

NAME: ContractCorrespondenceLetterBodyUpdt

COMPOSITION:

DEFINITION: A new or modified ContractCorrespondenceLetterBody input.

REFERENCES:

NAME: ContractCorrespondenceLetterComments

COMPOSITION:

DEFINITION: Comments on the letter.

REFERENCES:

NAME: ContractCorrespondenceLetterCommentsUpdt

COMPOSITION:

DEFINITION: A new or modified ContractCorrespondenceLetterCommentsUpdt input.

REFERENCES:

NAME: ContractCorrespondenceLetterControlNum

COMPOSITION:

DEFINITION: The unique identifying number of the Contract Correspondence Letter.

REFERENCES:

NAME: ContractCorrespondenceLetterCorYearUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: ContractCorrespondenceLetterDate

COMPOSITION:

DEFINITION: The date on which the letter was generated.

REFERENCES:

NAME: ContractCorrespondenceLetterDateUpdt

COMPOSITION:

DEFINITION: A new or modified ContractCorrespondenceLetterDate input.

REFERENCES:

NAME: ContractCorrespondenceLetterFolDateUpdt

COMPOSITION:

DEFINITION: A new or modified ContractCorrespondenceLetterFolDate input.

REFERENCES:

NAME: ContractCorrespondenceLetterFollowUpDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractCorrespondenceLetterReportYear
COMPOSITION:
DEFINITION: The year of the correspondence.
REFERENCES:

NAME: ContractCorrespondenceLetterResponseDate
COMPOSITION:
DEFINITION: The date on which a response is sent.
REFERENCES:

NAME: ContractCorrespondenceLetterRspsDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractCorrespondenceLetterRspsDate input.
REFERENCES:

NAME: ContractCorrespondenceLetterSspnDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractCorrespondenceLetterSspnDate input.
REFERENCES:

NAME: ContractCorrespondenceLetterSuspenseDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractCorrespondenceLetterSuspFlwDate
COMPOSITION:
DEFINITION: The date the TUO responded with a follow-up letter.
REFERENCES:

NAME: ContractCorrespondenceLetterType
COMPOSITION:
DEFINITION: The type of Contract Correspondence Letter. Type may be initial letter, annual letter, completion letter, report reminder letter, item request letter, payment withholding request letter or certification letter.
REFERENCES:

NAME: ContractCorrespondenceLetterTypeUpdt
COMPOSITION:
DEFINITION: A new or modified ContractCorrespondenceLetterType input.
REFERENCES:

NAME: ContractCorrespondenceLtrSuspFlwDtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrant
COMPOSITION: *ContractGrantNum + ContractGrantAwardDate +
ContractGrantCompleteDate + ContractGrantAmount + ContractGrantTitle +
ContractGrantType + ContractGrantName + ContractGrantAddress +
ContractGrantDateEntered + ContractGrantCloseDate + ContractGrantNTClause +
ContractGrantNTClauseDate + ContractGrantPRCOClause +
ContractGrantPRCOClauseDate + ContractGrantPatentClause +
ContractGrantSBIRContract + ContractGrantSBIRYear + ContractGrantSBIRPhase +
ContractGrantFinalNTRReportDate + ContractGrantFinalNTRReportApprvlDate +
ContractGrantCloseOut + ContractGrantCntctOffcrName +
ContractGrantCntctOffcrMailCode + ContractGrantTechRepName +
ContractGrantTechRepMailCode + ContractGrantTechRepWorkDivision +
ContractGrantPointOfContactName + ContractGrantPointOfContactPhone +
ContractGrantInitialLettersFlag + ContractGrantInterimReportFlag +
ContractGrantCompletionLetterFlag + ContractGrantSpecificItemsFlag +
ContractGrantFinalReportReminder + ContractGrantAnnualToTRCOFlag +
ContractGrantWthldngLetterFlag + ContractGrantCertificationFlag +
®OrganizationCode + ®NTRControlNum
DEFINITION: A Contract or Grant is a binding agreement between NASA and a second
party (university, non-profit organization or private company) which states the
responsibilities of both parties during new technology development.
REFERENCES: ANALYSIS(STORE) TCIS Process Model
ERD(ENTITY) TCIS-LOCAL Info Model

NAME: ContractGrantAddress
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrantAmount
COMPOSITION:
DEFINITION: The dollar value of the specific contract or grant.
REFERENCES:

NAME: ContractGrantAmountUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantAmount input.
REFERENCES:

NAME: ContractGrantAnnualToTRCOFlag
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrantAwardDate
COMPOSITION:
DEFINITION: The date of award signature for the Contract, or the date the work is to
begin for the Grant.
REFERENCES:

NAME: ContractGrantAwardDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantAwardDate input.
REFERENCES:

NAME: ContractGrantCertificationFlag
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrantCloseDate
COMPOSITION:
DEFINITION: The date the contract or grant was closed by the Technology Utilization Office.
REFERENCES:

NAME: ContractGrantCloseDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCloseDate input.
REFERENCES:

NAME: ContractGrantCloseOut
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrantCloseOutUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCloseOut input.
REFERENCES:

NAME: ContractGrantCntrctOffcrMailCode
COMPOSITION:
DEFINITION: Contract Officer's mail code.
REFERENCES:

NAME: ContractGrantCntrctOffcrMailCodeUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCntrctOffcrMailCode input.
REFERENCES:

NAME: ContractGrantCntrctOffcrName
COMPOSITION:
DEFINITION: Contract Officer's full name.
REFERENCES:

NAME: ContractGrantCntrctOffcrNameUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCntrctOffcrName input.
REFERENCES:

NAME: ContractGrantCompleteDate
COMPOSITION:
DEFINITION: The date for the end of the period of performance for the specific contract or grant.
REFERENCES:

NAME: ContractGrantCompleteDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCompleteDate input.
REFERENCES:

NAME: ContractGrantCompletionLetterFlag
COMPOSITION:
DEFINITION: Indicates whether to generate a compliance letter or certification letter.
REFERENCES:

NAME: ContractGrantComplianceLetterFlagUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantCompletionLetterFlag input.
REFERENCES:

NAME: ContractGrantDateEntered
COMPOSITION:
DEFINITION: The date the record was entered into the database.
REFERENCES:

NAME: ContractGrantDateEnteredUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantDateEntered input.
REFERENCES:

NAME: ContractGrantFinalNTRReportApplDateUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantFinalNTRReportApplDate input.
REFERENCES:

NAME: ContractGrantFinalNTRReportApprvlDate
COMPOSITION:
DEFINITION: The date the final Contractor/Grantee report is approved by the TUO.
REFERENCES:

NAME: ContractGrantFinalNTRReportDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractGrantFinalNTRReportUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantFinalNTRReportDate input.
REFERENCES:

NAME: ContractGrantFinalReportReminder
COMPOSITION:
DEFINITION: Indicates whether to generate a letter reminding the Contractor/Grantee to submit a final report to the TUO.
REFERENCES:

NAME: ContractGrantFinalReportReminderUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantFinalReportReminder input.

REFERENCES:

NAME: ContractGrantInitialLetterFlagUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantInitialLettersFlag input.

REFERENCES:

NAME: ContractGrantInitialLettersFlag

COMPOSITION:

DEFINITION: Indicates whether the program should generate an initial letter at the start of the contract/grant.

REFERENCES:

NAME: ContractGrantInterimReportFlag

COMPOSITION:

DEFINITION: Indicates whether to generate a reminder-for-interim-report letter.

REFERENCES:

NAME: ContractGrantInterimReportFlagUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantInterimReportFlag input.

REFERENCES:

NAME: ContractGrantName

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: ContractGrantNTClause

COMPOSITION:

DEFINITION: Indicates whether the contract or grant has a new technology clause.

REFERENCES:

NAME: ContractGrantNTClauseDate

COMPOSITION:

DEFINITION: The effective date of the new technology clause

REFERENCES:

NAME: ContractGrantNTClauseDateUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantNTClauseDate input.

REFERENCES:

NAME: ContractGrantNTClauseUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantNTClause input.

REFERENCES:

NAME: ContractGrantNum

COMPOSITION:

DEFINITION: The official number assigned the specific Contract or Grant at the time of award. This attribute is also a referential attribute (foreign key) which formalizes the relationship between the New Technology Report and Contract/Grant entities, between

Contract/Grant and Contract Potential Reportable Item, Contract/Grant and Contractor/Grantee, and between Contract/Grant and Contract Correspondence Letter.
REFERENCES:

NAME: ContractGrantPatentClause

COMPOSITION:

DEFINITION: Indicates whether the contract or grant has a patent rights clause.

REFERENCES:

NAME: ContractGrantPatentClauseUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantPatentClause input.

REFERENCES:

NAME: ContractGrantPointOfContactName

COMPOSITION:

DEFINITION: Contract/Grant contact person's name.

REFERENCES:

NAME: ContractGrantPointOfContactNameUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantPointOfContactName input.

REFERENCES:

NAME: ContractGrantPointOfContactPhone

COMPOSITION:

DEFINITION: Contract/Grant contact person's phone number.

REFERENCES:

NAME: ContractGrantPointOfContactPhoneUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantPointOfContactPhone input.

REFERENCES:

NAME: ContractGrantPRCOClause

COMPOSITION:

DEFINITION: Indicates whether there is a Patent Right Retention by the Contractor clause in the Contract/Grant.

REFERENCES:

NAME: ContractGrantPRCOClauseDate

COMPOSITION:

DEFINITION: Effective date of the Patent Rights Retention by Contractor clause according to the Federal Acquisition Register.

REFERENCES:

NAME: ContractGrantPRCOClauseDateUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantPRCOClauseDate input.

REFERENCES:

NAME: ContractGrantPRCOClauseUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantPRCOClause input.

REFERENCES:

NAME: ContractGrantSBIRContract

COMPOSITION:

DEFINITION: Indicates whether the contract is a Small Business Innovative Research contract.

REFERENCES:

NAME: ContractGrantSBIRContractUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantSBIRContract input.

REFERENCES:

NAME: ContractGrantSBIRPhase

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: ContractGrantSBIRYear

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: ContractGrantSpecificItemsFlag

COMPOSITION:

DEFINITION: Indicates that the program should generate a Request for Specific Items letter.

REFERENCES:

NAME: ContractGrantSpecificItemsFlagUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantSpecificItemsFlag input.

REFERENCES:

NAME: ContractGrantTechRepMailCode

COMPOSITION:

DEFINITION: Contract/Grant technical representative's mail code.

REFERENCES:

NAME: ContractGrantTechRepMailCodeUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantTechRepMailCode input.

REFERENCES:

NAME: ContractGrantTechRepName

COMPOSITION:

DEFINITION: Contract/Grant technical representative's full name.

REFERENCES:

NAME: ContractGrantTechRepNameUpdt

COMPOSITION:

DEFINITION: A new or modified ContractGrantTechRepName input.

REFERENCES:

NAME: ContractGrantTechRepWorkDivision
COMPOSITION:
DEFINITION: Contract/Grant technical representative's work division.
REFERENCES:

NAME: ContractGrantTechRepWorkDivisionUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantTechRepWorkDivision input.
REFERENCES:

NAME: ContractGrantTitle
COMPOSITION:
DEFINITION: A description of the work to be performed under the specific Contract or Grant.
REFERENCES:

NAME: ContractGrantTitleUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantTitle input.
REFERENCES:

NAME: ContractGrantType
COMPOSITION:
DEFINITION: Identifies the entity as a contract or a grant.
REFERENCES:

NAME: ContractGrantTypeUpdt
COMPOSITION:
DEFINITION: A new or modified ContractGrantType input.
REFERENCES:

NAME: ContractGrantWthldngLetterFlag
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: ContractPotentialReportableItem
COMPOSITION: *CPRINum + CPRIReportDate + CPRITitle + CPRILetterDate + CPRILetterType + CPRILetterGenerated + @ContractGrantNum + @NTRControlNum
DEFINITION: A Contract Potential Reportable Item provides information on current technology developed under contract to NASA.
REFERENCES: ERD(ENTITY) TCIS-LOCAL Info Model

NAME: Correspondence
COMPOSITION:
DEFINITION: Contains standard letter generated by the GENERATE CORRESPONDENCE process.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: CORRESPONDENCECONFIGURATION
COMPOSITION:
DEFINITION:
REFERENCES: ANALYSIS(STORE) TCIS Process Model

NAME: CorrespondenceGenerationCriteria
COMPOSITION:
DEFINITION:
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: CorrespondenceStatus
COMPOSITION:
DEFINITION: Contains tracking status for purpose of report generation. Also contains success or failure indication of the correspondence generation process. Contains data for viewing by the User.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: CPRILetterDate
COMPOSITION:
DEFINITION: Contains the date of the Contract Potential Reportable Item letter.
REFERENCES:

NAME: CPRILetterDateUpdt
COMPOSITION:
DEFINITION: A new or modified CPRILetterDate input.
REFERENCES:

NAME: CPRILetterGenerated
COMPOSITION:
DEFINITION: Indicates which CPRI letter is to be generated.
REFERENCES:

NAME: CPRILetterGeneratedUpdt
COMPOSITION:
DEFINITION: A new or modified CPRILetterGenerated input.
REFERENCES:

NAME: CPRILetterType
COMPOSITION:
DEFINITION: Identifies the type of letter generated under the Contract Potential Reportable Item.
REFERENCES:

NAME: CPRILetterTypeUpdt
COMPOSITION:
DEFINITION: A new or modified CPRILetterType input.
REFERENCES:

NAME: CPRINum
COMPOSITION:
DEFINITION: The unique identifier for the Contract Potential Reportable Item (CPRI). It is also a referential attribute which formalizes the relationship between CPRI and New Technology Report.
REFERENCES:

NAME: CPRIReportDate
COMPOSITION:
DEFINITION: The date the Contract Potential Reportable Item was reported by the Contracting Officer's technical representative.

REFERENCES:

NAME: CPRIReportDateUpdt

COMPOSITION:

DEFINITION: A new or modified CPRIReportDate input.

REFERENCES:

NAME: CPRITitle

COMPOSITION:

DEFINITION: The title of the Contract Potential Reportable Item.

REFERENCES:

NAME: CPRITitleUpdt

COMPOSITION:

DEFINITION: A new or modified CPRITitle input.

REFERENCES:

NAME: CREATENEWINSTANCE

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: DELETEINSTANCE

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: EntityAttributeName

COMPOSITION:

DEFINITION: Contains the name of the entity (table) and attribute (field) to be sorted.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: EntityType

COMPOSITION:

DEFINITION: Identifies the entity being sorted as an entire file/table or a subset of a table, i.e. selected instances (records).

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: EntryValidationStatus

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: Evolves

COMPOSITION:

DEFINITION: New Technology Reports evolve from Technology Utilization Projects. This relationship is M:M in that single Technology Utilization Project can evolve several NTRs, while a single Technology Utilization Project can produce several NTRs.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: GENERATECORRESPONDENCE

COMPOSITION:

DEFINITION: This process generates and tracks correspondence in support of NASA's contract/grant administration activities. It receives criteria from the User and contract

correspondence information from the TCIS INFORMATION data store. The GENERATE CORRESPONDENCE process creates standard correspondence in accordance with criteria from the User, current status of the letter being generated, and internal knowledge of when letters must be periodically sent. It also tracks the status of letters, keeping track of what letters must be sent when and to whom. The GENERATE CORRESPONDENCE process outputs standard letters and correspondence tracking status.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: GENERATEDETAILEDREPORT

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: GENERATELETTERS

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: GENERATEREPORT

COMPOSITION:

DEFINITION: The GENERATE REPORT process creates reports based on criteria established by the USER. It assembles information from unrelated or related entities and formats the related data in a form that can be viewed as information for the User. This process receives criteria from the USER. It also receives information from the TCIS INFORMATION data store, correspondence data, search data and sort data. This process outputs a formatted report in the form of a detailed report, summary report, status report or statistical report.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: GENERATESUMMARYREPORT

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: Identifies

COMPOSITION:

DEFINITION: Research Technology Objectives and Plans (RTOPs) identify Technology Utilization Projects. An RTOP can identify several Technology Utilization Projects, while a single Technology Utilization Project can be identified by a single RTOP. This is a 1:M relationship and is formalized by the referential attribute RTOPNum located in the Technology Utilization Project entity.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: Innovator

COMPOSITION: *InnovatorCode + InnovatorName + InnovatorAddress + InnovatorPhoneNum + ®NTRControlNum + ®OrganizationCode

DEFINITION: An Innovator is a scientist or other research and development individual whose discoveries lead to the generation of New Technology.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

ERD(ENTITY) TCIS-LOCAL Info Model

NAME: InnovatorAddress

COMPOSITION:

DEFINITION: The Innovator's address.
REFERENCES:

NAME: InnovatorAddressUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: InnovatorCode
COMPOSITION:
DEFINITION: The unique identifier for the Innovator entity. This attribute is also a referential attribute which formalizes the relationship between the New Technology and Innovator entities and between Organization and Innovator.
REFERENCES:

NAME: InnovatorInputData
COMPOSITION:
DEFINITION: Source data on which the Innovator record is based.
REFERENCES:

NAME: InnovatorName
COMPOSITION:
DEFINITION: The name of the Innovator.
REFERENCES:

NAME: InnovatorNameUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: InnovatorPhoneNum
COMPOSITION:
DEFINITION: The Innovator's phone number.
REFERENCES:

NAME: InnovatorPhoneNumUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: InstanceCreationStatus
COMPOSITION:
DEFINITION:
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: InstanceDeletionStatus
COMPOSITION:
DEFINITION:
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: InstanceModificationStatus
COMPOSITION:
DEFINITION:
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: IsAffiliatedWith

COMPOSITION:

DEFINITION: Innovators are affiliated with Organizations where they conduct their search for new technology. A single Innovator can be affiliated with none, one or several Organizations, while a single Organization can have several Innovators.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: IsAwardedTo

COMPOSITION:

DEFINITION: Contracts and Grants are awarded to Organizations. A single Organization can fulfill many Contracts or Grants, although a single Contract or Grant can be awarded to only one Organization. This is a 1:M relationship and is formalized by the referential attribute OrganizationCode located in the Contract/Grant entity.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: IsDevelopedBy

COMPOSITION:

DEFINITION: A single New Technology Report is developed by one or more Innovators, while a single Innovator can develop several New Technologie Reports. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between Innovator and New Technology. This new entity will contain the unique identifiers from both Innovator and New Technology, along with any additional attributes of the relation.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: IsResponsibleFor

COMPOSITION:

DEFINITION: Organizations are responsible for Technology Utilization Projects. A single Organization can guide one, two or several Technology Utilization Projects, while a single Technology Utilization Project can be guided by only one organization, which has overall responsibility for the Project.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: LOCALUploadData

COMPOSITION:

DEFINITION: Information uploaded from TCIS-LOCAL to TUNS-CENTRAL.

REFERENCES:

NAME: MODIFYINSTANCE

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

DICTIONARY ENTRIES: TCIS-LOCAL Data Dictionary ENTRIES: 438 DATE:
Thu, Oct 15, 1992 4:24 PM

ANALYSIS: TCIS Process Model

ERD: TCIS-LOCAL Info Model

NAME: NewTechnologyReport

COMPOSITION: *NTRControlNum + NTRTitle+ NTRDscrptn+ NTROrigin +
NTRRatingClass + NTRRelease + NTRDate + NTREvaluator + NTRDateToEvaluator +
NTRDateToInnovator + NTRPatentStatus + NTRInnovationAbstract + NTRTechBrief +

NTRDvlpmntState + NTRKeyWords + NTRPreparerName + NTRPublishDcsn +
 NTRPublicationData + NTRContractVrfctn + NTRTrackingPreparerName +
 NTRTrackingPatentOffcRvwDate + NTRTrackingPatentOffcRspnsDate +
 NTRTrackingSRICosmicSendDate + NTRTrackingSRICosmicRtnDate +
 NTRTrackingSRICosmicAddtnlInfoDate + NTRTrackingSRICosmicReEvalRcvDate +
 NTRTrackingSRICosmicReClass + NTRTrackingCosmicLibRemoveDate +
 NTRTrackingCosmicTechBriefDate + NTRTrackingInnovatorNotfctnDate +
 NTRTrackingTTANotfctnDate + NTRTrackingReconNum + NTRTrackingTUORcvDate
 + NTRTrackingPubRqstDate + NTRTrackingTBTWICTDate +
 NTRTrackingFinalTBICTDate + NTRTrackingTSPStartDate +
 NTRTrackingDateFromEvaluator + NTRTrackingTUOReturnDate +
 NTRTrackingSRICOSMICClassfctn + NTRTrackingFinalClassfctnDate +
 NTRTrackingPubRqstCntctDate + NTRTrackingTBInnovatorDate +
 NTRTrackingCameraCopyDate + NTRTrackingTSPAvail +
 NTRTrackingPubRqstPatentOffcDate + NTRTrackingPubRqstDcsnPatentOffcDate +
 NTRTrackingPROClause + NTRTrackingPatentRghtsWaive +
 NTRTrackingContrRetainPatentRghts + NTRTrackingPubRqstToContrDate +
 NTRTrackingPubDcsnFrContrDate + @CPRINum + @ContractGrantNum +
 @InnovatorCode + @TechnologyUtilizationProjectID + @SpaceBenefitsNum
 DEFINITION: A New Technology Report is a documented instance of an innovative
 procedure, science, technique, method or product that has been developed by a NASA
 organization or NASA contractor which is to be shared with private industry and/or
 academia. New Technology is documented in New Technology Report (NTRs) which
 describe the technology produced by NASA and its Contractors.
 REFERENCES: ANALYSIS(STORE) TCIS Process Model
 ANALYSIS(FLOW) TCIS Process Model
 ERD(ENTITY) TCIS-LOCAL Info Model

NAME: NTEInputData
 COMPOSITION:
 DEFINITION:
 REFERENCES:

NAME: NTRContractVrfctn
 COMPOSITION:
 DEFINITION: Indicates that verification of the contract number is required.
 REFERENCES:

NAME: NTRContractVrfctnUpdt
 COMPOSITION:
 DEFINITION:
 REFERENCES:

NAME: NTRControlNum
 COMPOSITION:
 DEFINITION: The unique identifying number assigned to the New Technology Report.
 This attribute is also a referential attribute which formalizes the relationship between the
 New Technology Report and Contract Potential Reportable Item entities. Likewise, it
 formalizes the relationships between the New Technology Report and Space Benefits,
 New Technology Report and Contract/Grant, New Technology Report and Innovator,
 and between New Technology Report and Technology Utilization Project.
 REFERENCES:

NAME: NTRDate
COMPOSITION:
DEFINITION: The official date of the NTR.
REFERENCES:

NAME: NTRDateData
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRDateToEvaluator
COMPOSITION:
DEFINITION: Date the NTR was sent to the evaluation agency.
REFERENCES:

NAME: NTRDateToEvaluatorUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRDateToInnovator
COMPOSITION:
DEFINITION: Date the NTR was sent to the Innovatot for review.
REFERENCES:

NAME: NTRDateToInnovatorUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRDscrptn
COMPOSITION:
DEFINITION: A textual description of the innovative technology.
REFERENCES:

NAME: NTRDscrptnUpdt
COMPOSITION:
DEFINITION: A new or modified NTRDscrptn input.
REFERENCES:

NAME: NTRDvlpmntState
COMPOSITION:
DEFINITION: Indicates the New Technology's current stage of development.
REFERENCES:

NAME: NTRDvlpmntStateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTREvaluator
COMPOSITION:
DEFINITION: Indicates whether the evaluator of the New Technology is COSMIC or SRI.
REFERENCES:

NAME: NTREvaluatorUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRInnovationAbstract
COMPOSITION:
DEFINITION: Contains an abstract of the Innovation of the New Technology.
REFERENCES:

NAME: NTRInnovationAbstractUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRKeyWords
COMPOSITION:
DEFINITION: Key Words from the NTR title or description.
REFERENCES:

NAME: NTRKeyWordsUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTROrigin
COMPOSITION:
DEFINITION: Origin of the NTR, e.g. primary contractor, subcontractor, NASA in-house, joint NASA-Contract/Grantee, multiple.
REFERENCES:

DICTIONARY ENTRIES: TCIS-LOCAL Data Dictionary ENTRIES: 438 DATE:
Thu, Oct 15, 1992 4:25 PM

ANALYSIS: TCIS Process Model
ERD: TCIS-LOCAL Info Model

NAME: NTROriginUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRPatentStatus
COMPOSITION:
DEFINITION: Indicates the patent status of the New Technology.
REFERENCES:

NAME: NTRPatentStatusUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRPreparerName
COMPOSITION:
DEFINITION: The initials of the preparer of the NTR report.
REFERENCES:

NAME: NTRPreparerNameUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRPublicationData
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRPublicationDataUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRPublishDcsn
COMPOSITION:
DEFINITION: Indicates a decision to publish the NTR.
REFERENCES:

NAME: NTRPublishDcsnUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRRatingClass
COMPOSITION:
DEFINITION: A rating given New Technology for its innovative qualities and its applicability to industry.
REFERENCES:

NAME: NTRRatingClassUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRRelease
COMPOSITION:
DEFINITION: Indicates whether the New Technology should be released to Central, IACs or clients.
REFERENCES:

NAME: NTRReleaseUpdt
COMPOSITION:

DEFINITION:
REFERENCES:

NAME: NTRTechBrief

COMPOSITION:

DEFINITION: Contains the publication number, volume, page number and date of the Technical Publication in which the NTR appears.

REFERENCES:

NAME: NTRTechBriefUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTitle

COMPOSITION:

DEFINITION: A descriptive title assigned the new technology.

REFERENCES:

NAME: NTRTitleUpdt

COMPOSITION:

DEFINITION: A new or modified NTRTitleUpdt input.

REFERENCES:

DICTIONARY ENTRIES: TCIS-LOCAL Data Dictionary ENTRIES: 438 DATE:
Thu, Oct 15, 1992 4:29 PM

ANALYSIS: TCIS Process Model

ERD: TCIS-LOCAL Info Model

NAME: NTRTrackingCameraCopyDate

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingCameraCopyDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingContrRetainPatentRghts

COMPOSITION:

DEFINITION: Whether the Contractor elected to retain patent rights or waive them to NASA.

REFERENCES:

NAME: NTRTrackingContrRetainPatentRghtsUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingCosmicLibRemoveDate

COMPOSITION:

DEFINITION: The date the NTR is removed from the COSMIC library.

REFERENCES:

NAME: NTRTrackingCosmicLibRemoveDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingCosmicTechBriefDate

COMPOSITION:

DEFINITION: The date the Tech Brief is received from COSMIC.

REFERENCES:

NAME: NTRTrackingCosmicTechBriefDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingDateFromEvaluator

COMPOSITION:

DEFINITION: Date the NTR is received from the evaluator.

REFERENCES:

ANALYSIS: TCIS Process Model

ERD: TCIS-LOCAL Info Model

NAME: NTRTrackingDateFromEvaluatorUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingFinalClassfctnDate

COMPOSITION:

DEFINITION: Date of TUO's final classification based on evaluation and review of evaluation by Innovator.

REFERENCES:

NAME: NTRTrackingFinalClassfctnDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingFinalTBICTDate

COMPOSITION:

DEFINITION: Date the final draft Tech Brief is sent to ICT for review.

REFERENCES:

NAME: NTRTrackingFinalTBICTDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingInnovatorNotfctnDate

COMPOSITION:

DEFINITION: The date the Innovator is notified of the NTR receipt by the TUO.

REFERENCES:

NAME: NTRTrackingInnovatorNotfctnDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPatentOffcRspnsDate

COMPOSITION:

DEFINITION: The date the response to an NTR is received from the Patent office.

REFERENCES:

NAME: NTRTrackingPatentOffcRspnsDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPatentOffcRvwDate

COMPOSITION:

DEFINITION: The date the Patent office is sent the NTR for initial review.

REFERENCES:

NAME: NTRTrackingPatentOffcRvwDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPatentRghtsWaive

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPatentRghtsWaiveUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPreparerName

COMPOSITION:

DEFINITION: The name of the individual responsible for tracking the NTR.

REFERENCES:

NAME: NTRTrackingPreparerNameUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingPROClause

COMPOSITION:

DEFINITION: Indicates whether there is a PROCO clause in the NTR.

REFERENCES:

NAME: NTRTrackingPROClauseUpdt

COMPOSITION:

DEFINITION:
REFERENCES:

NAME: NTRTrackingPubDcsnFrContrDate
COMPOSITION:
DEFINITION: Date of the publishing decision from the Contractor.
REFERENCES:

NAME: NTRTrackingPubDcsnFrContrDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstCntrectDate
COMPOSITION:
DEFINITION: Date of request to Contractor for a decision on publication.
REFERENCES:

NAME: NTRTrackingPubRqstCntrectDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstDcsnPatentOffcDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstDcsnPatentOffcDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstPatentOffcDate
COMPOSITION:
DEFINITION: Date a request is made of the patent office for a decision on publishing.
REFERENCES:

NAME: NTRTrackingPubRqstPatentOffcDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstToContrDate

COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingPubRqstToContrDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingReconNum
COMPOSITION:
DEFINITION: Contains the Recon number of the NTR.
REFERENCES:

NAME: NTRTrackingReconNumUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingSRICosmicAddtnlInfoDate
COMPOSITION:
DEFINITION: Contains the date additional information is sent to SRI/COSMIC.
REFERENCES:

NAME: NTRTrackingSRICosmicAddtnlInfoDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingSRICOSMICClassfctn
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingSRICOSMICClassfctnUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingSRICosmicReClass
COMPOSITION:
DEFINITION: Contains the re-classification code (1 thru 4) based on a re-evaluation of the New Technology. A re-evaluation is due to additional information about the New Technology.
REFERENCES:

NAME: NTRTrackingSRICosmicReClassUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingSRICosmicReEvalRcvDate
COMPOSITION:
DEFINITION: The date SRI/COSMIC re-evaluation is received.

REFERENCES:

NAME: NTRTrackingSRICosmicReEvalRcvDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingSRICosmicRtnDate

COMPOSITION:

DEFINITION: The date the NTR is returned from SRI/COSMIC.

REFERENCES:

NAME: NTRTrackingSRICosmicRtnDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingSRICosmicSendDate

COMPOSITION:

DEFINITION: The date the NTR is sent to SRI/COSMIC.

REFERENCES:

NAME: NTRTrackingSRICosmicSendDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingTBInnovatorDate

COMPOSITION:

DEFINITION: Date initial Tech Brief draft is submitted to Innovator for review, and date it is returned from Innovator.

REFERENCES:

NAME: NTRTrackingTBInnovatorDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingTBTWICTDate

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingTBTWICTDateUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: NTRTrackingTSPAvail

COMPOSITION:

DEFINITION: Date the Technical Support package is available to the public.

REFERENCES:

NAME: NTRTrackingTSPAvailUpdt

COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingTSPStartDate
COMPOSITION:
DEFINITION: Date work begins on the Technical Support package.
REFERENCES:

NAME: NTRTrackingTSPStartDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingTTANotfctnDate
COMPOSITION:
DEFINITION: The date the Technical Transfer Agent is notified.
REFERENCES:

NAME: NTRTrackingTTANotfctnDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingTUORcvDate
COMPOSITION:
DEFINITION: Date the NTR is first received by the TUO.
REFERENCES:

NAME: NTRTrackingTUORcvDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingTUOReturnDate
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: NTRTrackingTUOReturnDateUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: Organization
COMPOSITION: *OrganizationCode + OrganizationTitle + OrganizationSection +
OrganizationBranch + OrganizationDivision + OrganizationType +
OrganizationMailCode + ®SpaceBenefitsNum + ®InnovatorCode
DEFINITION: A NASA Organization is an institution active in the Technology
Utilization effort. Such institution may be industrial centers, universities, government
agencies contractors, grantees or employers. All are producers or consumers of new
technology.
REFERENCES: ANALYSIS(STORE) TCIS Process Model
ERD(ENTITY) TCIS-LOCAL Info Model

NAME: OrganizationBranch
COMPOSITION:
DEFINITION: The name of the branch within the Organization.
REFERENCES:

NAME: OrganizationBranchUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: OrganizationCode
COMPOSITION:
DEFINITION: The standard NASA code for the organization. This attribute is also a referential attribute which formalizes the relationship between the Organization and Innovator entities, between Organization and Space Benefits, Organization and Technology Utilization Project, Organization and Research and Technology Resume, and between Organization and Contract/Grant.
REFERENCES:

NAME: OrganizationDivision
COMPOSITION:
DEFINITION: The name of the division within the Organization.
REFERENCES:

NAME: OrganizationDivisionUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: OrganizationMailCode
COMPOSITION:
DEFINITION: The mail code of the Organization.
REFERENCES:

NAME: OrganizationMailCodeUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: OrganizationSection
COMPOSITION:
DEFINITION: The name of the section within the Organization.
REFERENCES:

NAME: OrganizationSectionUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: OrganizationTitle
COMPOSITION:
DEFINITION: The title of the Organization.
REFERENCES:

NAME: OrganizationTitleUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: OrganizationType
COMPOSITION:
DEFINITION: Identifies the Organization as a contractor, grantee, employer or consumer of New Technology.
REFERENCES:

NAME: OrganizationTypeUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: Report
COMPOSITION:
DEFINITION: This data flow contains standard or customized reports generated by the GENERATE REPORT process. Such reports include listings, statistical Report, summary Report and status reports.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: ReportGenerationCriteria
COMPOSITION:
DEFINITION: Contains criteria against which Report and correspondence are generated. Identifies the type of report, i.e. detailed, summary, statistical or status; and the entity to be reported.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: ReportGenerationStatus
COMPOSITION:
DEFINITION: Contains the status of the report generation process.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: RequiresReportsOn
COMPOSITION:
DEFINITION: Contracts or Grants require that potential reportable new technologies be reported. A single Contract or Grant can require that several Contract Potential Reportable Items be reported, while a single Contract Potential Reportable item is authorized for reporting by a single Contract or Grant.
REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: RequiresTransmittalOf
COMPOSITION:
DEFINITION: Contracts or Grants require periodic or as-needed transmittal of Contract Correspondence Letters. This is a 1:M relationship, i.e., a single Contract or Grant requires transmittal of several Contract Correspondence Letters, while a single Contract Correspondence Letter may be required by only one specific Contract or Grant.
Note: All letters, except the Initial letters at the beginning of the Contract/Grant and the Certification letter, may be issued several times during the life of a single Contract/Grant. Further, follow-up letters, when applicable, may also be issued several times during the

life of a single Contract/Grant for all Contract/Grant letters except the Initial and Certification letters.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

NAME: ResearchTechnologyResume

COMPOSITION: *RTRNum + RTRTitle + RTRRfmcNotes + RTRDscrptn +
RTRDatePrepared + RTRFiscalYear + @OrganizationCode +@RTOPTNum

DEFINITION: A Research and Technology Resume (RTR) is a means by which NASA scientists define research and development tasks in support of Research and Technology Objectives and Plans (RTOPs). RTRs assist in tracking In-House Potential New Technologies.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

ERD(ENTITY) TCIS-LOCAL Info Model

NAME: RTOP

COMPOSITION: *RTOPNum + RTOPSubject + RTOPTitle + RTOPAccessionNum +
RTOPOrganization + RTOPAbstract + RTOPContactName + RTOPContactPhoneNum

DEFINITION: A NASA Research and Technology Operating Plan (RTOP) identifies research and development activities conducted within NASA.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

ERD(ENTITY) TCIS-LOCAL Info Model

NAME: RTOPAbstract

COMPOSITION:

DEFINITION: A short descriptive summary of the RTOP.

REFERENCES:

NAME: RTOPAbstractUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: RTOPAccessionNum

COMPOSITION:

DEFINITION: The number used to sequentially assign RTOPS within the summary report.

REFERENCES:

NAME: RTOPAccessionNumUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: RTOPContactName

COMPOSITION:

DEFINITION: The name of the individual who may be contacted regarding the RTOP.

REFERENCES:

NAME: RTOPContactNameUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: RTOPContactPhoneNum

COMPOSITION:
DEFINITION: The phone number of the individual who may be contacted regarding the RTOP.
REFERENCES:

NAME: RTOPContactPhoneNumUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTOPNum
COMPOSITION:
DEFINITION: The unique identifying number of the RTOP. This attribute is also a referential attribute which formalizes the relationship between the RTOP and Technology Utilization Project entities. This attribute also links the RTOP and Research and Technology Resume entities.
REFERENCES:

NAME: RTOPOrganization
COMPOSITION:
DEFINITION: The NASA organization responsible for the RTOP.
REFERENCES:

NAME: RTOPOrganizationUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTOPSubject
COMPOSITION:
DEFINITION: Contains the subject matter of the Research Technology Objective and Plan.
REFERENCES:

NAME: RTOPSubjectUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTOPTitle
COMPOSITION:
DEFINITION: The title of the RTOP.
REFERENCES:

NAME: RTOPTitleUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTRDatePrepared
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTRDscrptn
COMPOSITION:
DEFINITION: A technical description of the Research Technical Resume.
REFERENCES:

NAME: RTRDscrptnUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTRFiscalYear
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTRNum
COMPOSITION:
DEFINITION: The unique identifier for the Research and Technology Resume (RTR).
This attribute is also a referential attribute which formalizes the relationship between the
Research and Technology Resume and RTOP entities.
REFERENCES:

NAME: RTRRfrncNotes
COMPOSITION:
DEFINITION: Contains any reference notes that apply to the Research Technical
Resume (RTR).
REFERENCES:

NAME: RTRRfrncNotesUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: RTRTitle
COMPOSITION:
DEFINITION: The title of the Research Technical Resume (RTR).
REFERENCES:

NAME: RTRTitleUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SearchAttributeName
COMPOSITION:
DEFINITION: Contains the name of the attribute (field) on which the search operation
will be performed.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SearchOperator
COMPOSITION:
DEFINITION: Defines how (e.g. =, >, <, etc.) to compare the contents of an attribute to a
specified value.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SearchSelectResults

COMPOSITION:

DEFINITION: Contains information resulting from a search or select operation. The information contained in this message is used for display (viewing), sort operation or report generation.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SearchStatus

COMPOSITION:

DEFINITION: Contains the status of the search process.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SEARCHTCIS

COMPOSITION:

DEFINITION: The SEARCH TCIS process finds information that meets criteria entered by the USER. Searching is performed for the purpose of viewing (browsing), updating or performing calculations on information. This process receives search criteria in the form of Search Attribute Name, Search Operator and Search Value messages from the USER. It also receives data from the TCIS INFORMATION data store and a Select Criteria message. It outputs Search Results and Search Status.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: SearchValue

COMPOSITION:

DEFINITION: Contains the value of the attribute to which each instance (record) is compared.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SelectCriteria

COMPOSITION:

DEFINITION: Contains criteria against which a selected instance or group of instances will be located and displayed in preparation of further processing, such as browsing or sorting.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SortResults

COMPOSITION:

DEFINITION: Contains the results of a sort performed on information from the TCIS INFORMATION data store, or the results of a sort performed on selected TCIS information.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SORTTCIS

COMPOSITION:

DEFINITION: The SORT TCIS process changes the order of information within an entity according to criteria from the USER and the values in the entity. This process sorts information in either ascending or descending order. It performs sorts on selected information or on entire entities. It also performs multilevel sorting of information, which means sorting information on various attributes within an instance of an entity. This process receives Sort Criteria from the USER. It also receives data from the TUNS INFORMATION data store. It returns Sort Results which are used in screen display or printed reports.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: SortType

COMPOSITION:

DEFINITION: Identifies the sort operation as either an ascending sort or descending sort.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: SpaceBenefits

COMPOSITION: *SpaceBenefitsNum + SpaceBenefitsTitle + SpaceBenefitsSummary +
SpaceBenefitsNature + SpaceBenefitsRevenue + SpaceBenefitsCost +
SpaceBenefitsCompanyName + SpaceBenefitsCompanyAddr +
SpaceBenefitsCompanyPhoneNum + SpaceBenefitsContactPerson +
SpaceBenefitsTypeBenefit + SpaceBenefitsPatent + SpaceBenefitsTechAsstnce +
SpaceBenefitsTotalValue + SpaceBenefitsInvestment + SpaceBenefitsKeyWords +
SpaceBenefitsSource + SpaceBenefitsLtryRfrnce + SpaceBenefitsInfoCntntRev +
SpaceBenefitsCorpReleaseApprvlDt + SpaceBenefitsAuthority +
SpaceBenefitsProprietaryData + SpaceBenefitsUserType + SpaceBenefitsBusinessType +
SpaceBenefitsEmployeeNum + SpaceBenefitsSICNum + SpaceBenefitsUserLocation +
SpaceBenefitsFirstNASACntct + SpaceBenefitsReferral + SpaceBenefitsNotes +
SpaceBenefitsUseNASAAgain + SpaceBenefitsReleaseToCentral +
SpaceBenefitsReleaseDate + SpaceBenefitsSpinOffReference +
SpaceBenefitsLocalBenefitNumber + SpaceBenefitsPatentDate +
SpaceBenefitsReportSource + SpaceBenefitsReleaseApprvlAuthrtyPhone +
®OrganizationCode + ®NTRControlNum

DEFINITION: Space Benefits are cases of successful transfer of NASA technology. Such benefits are derived from New Technology which is the result of contracts awarded by NASA or research performed by NASA. Space Benefits provide a means of uniform, continuous information flow on technology transfer among Technology Utilization sites.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

ANALYSIS(FLOW) TCIS Process Model

ERD(ENTITY) TCIS-LOCAL Info Model

NAME: SpaceBenefitsAuthority

COMPOSITION:

DEFINITION: The name of the corporate authority who has ultimate responsibility for the product/service which has profited from the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsAuthorityUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsBusinessType

COMPOSITION:

DEFINITION: The type of business (Minority-owned, Female-owned, Small Business, Disadvantaged, Section 8A) which benefitted from the New Technology.

REFERENCES:

NAME: SpaceBenefitsBusinessTypeUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsCompanyAddr

COMPOSITION:

DEFINITION: Contains the address of the company that is the beneficiary of the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsCompanyAddrUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsCompanyName

COMPOSITION:

DEFINITION: The name of the company which has benefited from the new technology.

REFERENCES:

NAME: SpaceBenefitsCompanyNameUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsCompanyPhoneNum

COMPOSITION:

DEFINITION: The telephone number of the company which has benefited from the new technology.

REFERENCES:

NAME: SpaceBenefitsCompanyPhoneNumUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsContactPerson

COMPOSITION:

DEFINITION: The name of the contact person at the company which has benefited from the new technology.

REFERENCES:

NAME: SpaceBenefitsContactPersonUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsCorpReleaseApprvlDt

COMPOSITION:

DEFINITION: An indication of whether corporate release approval was granted the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsCorpReleaseApprvlDtUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsCost

COMPOSITION:

DEFINITION: An indication of the effect of the Space Benefit on cost, typically the amount of cost reduction.

REFERENCES:

NAME: SpaceBenefitsCostUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsEmployeeNum

COMPOSITION:

DEFINITION: The approximate number of employees who work for the organization claiming the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsEmployeeNumUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsFirstNASACntct

COMPOSITION:

DEFINITION: Contains the NASA contact code (SPINOFF, Tech Brief, COSMIC catalogue, etc).

REFERENCES:

NAME: SpaceBenefitsFirstNASACntctUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsInfoCntntRev

COMPOSITION:

DEFINITION: An indication of whether the information was reviewed by the company.

REFERENCES:

NAME: SpaceBenefitsInfoCntntRevUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsInputData

COMPOSITION:

DEFINITION: Source data on which the Space Benefits record is based.

REFERENCES:

NAME: SpaceBenefitsInvestment

COMPOSITION:

DEFINITION: The amount of the total investment in the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsInvestmentUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsKeyWords
COMPOSITION:
DEFINITION: Contains technical terms associated with the benefit.
REFERENCES:

NAME: SpaceBenefitsKeyWordsUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsLitryRfrnce
COMPOSITION:
DEFINITION: The literature references associated with the Space Benefit.
REFERENCES:

NAME: SpaceBenefitsLitryRfrnceUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsLocalBenefitNumber
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsNature
COMPOSITION:
DEFINITION: Identifies the category or characteristics of the Space Benefit. Such characteristics include new or improved products, processes, material.
REFERENCES:

NAME: SpaceBenefitsNatureUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsNotes
COMPOSITION:
DEFINITION: Contains notes relating to the Space Benefit's financial information, company investment, type of user, geographic statistics or NASA referrals.
REFERENCES:

NAME: SpaceBenefitsNotesUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: SpaceBenefitsNum
COMPOSITION:

DEFINITION: The unique identifier for the Space Benefit. It is also a referential attribute which formalizes the relationships between Space Benefits and New Technology Report, and between Space Benefits and Organization.
REFERENCES:

NAME: SpaceBenefitsPatent

COMPOSITION:

DEFINITION: The patent number assigned to the benefit. Also contains the patent date.

REFERENCES:

NAME: SpaceBenefitsPatentDate

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsPatentUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsProprietaryData

COMPOSITION:

DEFINITION: An indication of whether the Space Benefit should be considered proprietary and not released.

REFERENCES:

NAME: SpaceBenefitsProprietaryDataUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsReferral

COMPOSITION:

DEFINITION: Contains the referral code of the NASA organization.

REFERENCES:

NAME: SpaceBenefitsReferralUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsReleaseApprvlAuthrtyPhone

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsReleaseDate

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsReleaseToCentral

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsReportSource

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsRevenue

COMPOSITION:

DEFINITION: An indication of the effect of the Space Benefit on revenue, typically whether the effect is an increase.

REFERENCES:

NAME: SpaceBenefitsRevenueUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsSICNum

COMPOSITION:

DEFINITION: The Standard Industrial Code (SIC) number for the Organization reporting Space Benefits.

REFERENCES:

NAME: SpaceBenefitsSICNumUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsSource

COMPOSITION:

DEFINITION: NASA source information or the benefit report source (e.g. NTR#, COSMIC#, TB#, STAR#, etc).

REFERENCES:

NAME: SpaceBenefitsSourceUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsSpinOffReference

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsSummary

COMPOSITION:

DEFINITION: Contains a summary of the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsSummaryUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsTechAsstnce

COMPOSITION:

DEFINITION: The technological assistance provided by the company whose product(s) benefitted from the new technology.

REFERENCES:

NAME: SpaceBenefitsTechAsstnceUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsTitle

COMPOSITION:

DEFINITION: The title of the Space Benefit.

REFERENCES:

NAME: SpaceBenefitsTitleUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsTotalValue

COMPOSITION:

DEFINITION: The amount of the total value of the benefit.

REFERENCES:

NAME: SpaceBenefitsTotalValueUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsTypeBenefit

COMPOSITION:

DEFINITION: The list of financial and/or technological gains that the new product, service or process has experienced as a result of the new technology.

REFERENCES:

NAME: SpaceBenefitsTypeBenefitUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsUseNASAAgain

COMPOSITION:

DEFINITION: An indication of whether the reporting organization would be inclined to use NASA again as a source of New Technology.

REFERENCES:

NAME: SpaceBenefitsUseNASAAgainUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsUserLocation

COMPOSITION:

DEFINITION: Contains the name of the user's state, county, city, Economic Development Area, Standard Metropolitan Statistical Area, Congressional District.

REFERENCES:

NAME: SpaceBenefitsUserLocationUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: SpaceBenefitsUserType

COMPOSITION:

DEFINITION: The classification of the user of the New Technology, i.e. whether the user is a private citizen, local or state government, US Federal government, education organization, non-profit company, foreign/international business or business organization.

REFERENCES:

NAME: SpaceBenefitsUserTypeUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: Stimulate

COMPOSITION:

DEFINITION: Contracts and Grants issued to universities, non-profit organizations and corporations can stimulate New Technology Reports. This relationship is modeled as a M:M relationship; i.e. a single Contract or Grant can stimulate zero, one or several New Technology Reports, while a single New Technology Report can be stimulated by one or more Contracts or Grants. Further analysis of this M:M relationship will result in the conceptualization of a third entity which will be required to record the relationship, or correlation, between ContractGrant and New Technology. This new entity will contain the unique identifiers from both ContractGrant and New Technology, along with any additional attributes of the relation.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

ANALYSIS: TCIS Process Model

ERD: TCIS-LOCAL Info Model

NAME: TCIS-CENTRAL

COMPOSITION:

DEFINITION: The Technology Transfer Network Communications and Information System (TCIS)-CENTRAL is an information processing system which collects, tracks and Report summarized information relating to New Technologies. TCIS-CENTRAL provides information-sharing capabilities among all TCIS-LOCAL sites. TCIS-CENTRAL provides download data to TCIS-LOCAL to update information contained within TCIS-LOCAL. The purpose of TCIS-CENTRAL is to enhance the process of acquiring, evaluating and disseminating New Technology developed by NASA and those under contract to NASA by providing a repository for collecting and disseminating New Technology information to or from LOCAL-TUNS sites.

REFERENCES: ANALYSIS(EXTERNAL) TCIS Process Model

NAME: TCIS-LOCAL

COMPOSITION:

DEFINITION: The Technology Transfer Network Communications and Information System (TCIS)-LOCAL is an information processing system which collects, tracks and reports New Technology developed by NASA and its contractors and/or grantees. The purpose of TCIS-LOCAL is to enhance the process of acquiring, evaluating and disseminating New Technology developed by NASA and those under contract to NASA. TCIS-LOCAL interfaces with USERS active in the Technology Utilization effort, and with TCIS-CENTRAL -- a repository of new Technology information. TCIS-LOCAL receives commands and data relating to NEW Technology from USERS and provides the software functionality required to process data relating to New Technology. Such processing includes storing, retrieving, maintaining, querying, viewing, searching information and generating reports. TCIS-LOCAL generates correspondence which is used to monitor and manage the Technology Utilization effort. It also accepts New Technology update information from TCIS-CENTRAL. It outputs information to the USER in the form of reports, correspondence and responses to query and search commands.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: TCISData

COMPOSITION: CPRINum + CPRIReportDate + CPRITitle + CPRILetterDate + CPRILetterType + CPRILetterGenerated + NTRControlNum + NTRTitle+ NTRDscrptn+ NTROrigin + NTRRatingClass + NTRRelease + NTRDate + NTREvaluator + NTRDateToEvaluator + NTRDateToInnovator + NTRPatentStatus + NTRInnovationAbstract + NTRTechBrief + NTRDvlpmntState + NTRKeyWords + NTRPreparerName + NTRPublishDcsn + NTRPublicationData + NTRContractVrfctn + NTRTrackingPreparerName + NTRTrackingPatentOffcRvwDate + NTRTrackingPatentOffcRspnsDate + NTRTrackingSRICosmicSendDate + NTRTrackingSRICosmicRtnDate + NTRTrackingSRICosmicAddtnlInfoDate + NTRTrackingSRICosmicReEvalRcvDate + NTRTrackingSRICosmicReClass + NTRTrackingCosmicLibRemoveDate + NTRTrackingCosmicTechBriefDate + NTRTrackingInnovatorNotfctnDate + NTRTrackingTTANotfctnDate + NTRTrackingReconNum + NTRTrackingTUORcvDate + NTRTrackingPubRqstDate + NTRTrackingTBTWICTDate + NTRTrackingFinalTBICTDDate + NTRTrackingTSPStartDate + NTRTrackingDateFromEvaluator + NTRTrackingTUOReturnDate + NTRTrackingSRICOSMICClassfctn + NTRTrackingFinalClassfctnDate + NTRTrackingPubRqstCntctDate + NTRTrackingTBInnovatorDate + NTRTrackingCameraCopyDate + NTRTrackingTSPAvail + NTRTrackingPubRqstPatentOffcDate + NTRTrackingPubRqstDcsnPatentOffcDate + NTRTrackingPROClause + NTRTrackingPatentRghtsWaive + NTRTrackingContrRetainPatentRghts + NTRTrackingPubRqstToContrDate + NTRTrackingPubDcsnFrContrDate + SpaceBenefitsNum + SpaceBenefitsTitle + SpaceBenefitsSummary + SpaceBenefitsNature + SpaceBenefitsRevenue + SpaceBenefitsCost + SpaceBenefitsCompanyName + SpaceBenefitsCompanyAddr + SpaceBenefitsCompanyPhoneNum + SpaceBenefitsContactPerson + SpaceBenefitsTypeBenefit + SpaceBenefitsPatent + SpaceBenefitsTechAsstnce + SpaceBenefitsTotalValue + SpaceBenefitsInvestment + SpaceBenefitsKeyWords + SpaceBenefitsSource + SpaceBenefitsLitryRfrnce + SpaceBenefitsInfoCntntRev + SpaceBenefitsCorpReleaseApprvlDt + SpaceBenefitsAuthority + SpaceBenefitsProprietaryData + SpaceBenefitsUserType + SpaceBenefitsBusinessType + SpaceBenefitsEmployeeNum + SpaceBenefitsSICNum + SpaceBenefitsUserLocation + SpaceBenefitsFirstNASACntct + SpaceBenefitsReferral + SpaceBenefitsNotes + SpaceBenefitsUseNASAagain + SpaceBenefitsReleaseToCentral +

SpaceBenefitsReleaseDate + SpaceBenefitsSpinOffReference +
 SpaceBenefitsLocalBenefitNumber + SpaceBenefitsPatentDate +
 SpaceBenefitsReportSource + SpaceBenefitsReleaseApprvlAuthrtyPhone +
 InnovatorCode + InnovatorName + InnovatorAddress + InnovatorPhoneNum +
 ContractGrantNum + ContractGrantAwardDate + ContractGrantCompleteDate +
 ContractGrantAmount + ContractGrantTitle + ContractGrantType + ContractGrantName
 + ContractGrantAddress + ContractGrantDateEntered + ContractGrantCloseDate +
 ContractGrantNTClause + ContractGrantNTClauseDate + ContractGrantPRCOClause +
 ContractGrantPRCOClauseDate + ContractGrantPatentClause +
 ContractGrantSBIRContract + ContractGrantSBIRYear + ContractGrantSBIRPhase +
 ContractGrantFinalNTRReportDate + ContractGrantFinalNTRReportApprvlDate +
 ContractGrantCloseOut + ContractGrantCntrctOfferName +
 ContractGrantCntrctOfferMailCode + ContractGrantTechRepName +
 ContractGrantTechRepMailCode + ContractGrantTechRepWorkDivision +
 ContractGrantPointOfContactName + ContractGrantPointOfContactPhone +
 ContractGrantInitialLettersFlag + ContractGrantInterimReportFlag +
 ContractGrantCompletionLetterFlag + ContractGrantSpecificItemsFlag +
 ContractGrantFinalReportReminder + ContractGrantAnnualToTRCOFlag +
 ContractGrantWthldngLetterFlag + ContractGrantCertificationFlag + OrganizationCode
 + OrganizationTitle + OrganizationSection + OrganizationBranch +
 OrganizationDivision + OrganizationType + OrganizationMailCode +
 TechnologyUtilizationProjectID + TechnologyUtilizationProjectTopic +
 TechnologyUtilizationProjectTitle + TechnologyUtilizationProjectAbstract +
 TechnologyUtilizationProjectCenterName + TechnologyUtilizationProjectTUOName +
 TechnologyUtilizationProjectPhoneNum + TechnologyUtilizationProjectFundStatus +
 TechnologyUtilizationProjectNASAFund + TechnologyUtilizationProjectProblems +
 TechnologyUtilizationProjectAccmplshmnt + TechnologyUtilizationProjectActvtsPlan +
 TechnologyUtilizationProjectFsbltyStdy + TechnologyUtilizationProjectCntrctAwdDat +
 TechnologyUtilizationProjectPrtypDevDate + TechnologyUtilizationProjectOptmztnDate
 + TechnologyUtilizationProjectFldLabDate + TechnologyUtilizationProjectFinalRprtDat
 + TechnologyUtilizationProjectCmrclztnDate + TechnologyUtilizationProjectCmpltdDate
 + TechnologyUtilizationProjectFundingFY + TechnologyUtilizationProjectTechnCntct +
 TechnologyUtilizationProjectDateLstChngd + TechnologyUtilizationProjectReleaseCntrl
 + TechnologyUtilizationProjectDteToCentral +
 TechnologyUtilizationProjectStatusAsOfDt + TechnologyUtilizationProjectApprvdStrtDt
 + TechnologyUtilizationProjectOtherFunds + ContractCorrespondenceLetterControlNum
 + ContractCorrespondenceLetterDate + ContractCorrespondenceLetterType +
 ContractCorrespondenceLetterSuspenseDate +
 ContractCorrespondenceLetterSuspnsFlwDate +
 ContractCorrespondenceLetterFollowUpDate +
 ContractCorrespondenceLetterResponseDate +
 ContractCorrespondenceLetterReportYear + ContractCorrespondenceLetterComments +
 ContractCorrespondenceLetterBody + RTRNum + RTRTitle + RTRRfmcNotes +
 RTRDscrptn + RTRDatePrepared + RTRFiscalYear + RTOPNum + RTOPSubject +
 RTOPTitle + RTOPAccessionNum + RTOPOrganization + RTOPAbstract +
 RTOPContactName + RTOPContactPhoneNum

DEFINITION: Contains an update to the TCIS INFORMATION data store. Such updates may include entries from the User, entries transferred from TCIS-Central, or entries from internal TCIS-LOCAL processes such as the Correspondence generation function. These entries have been validated or converted to TCIS storage format.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TCISDownloadData

COMPOSITION:

DEFINITION: TCISDownloadData is information output from TCIS-CENTRAL which become update information for TUNS-LOCAL. These updates include information about New Technology, Space Benefits and Technology Utilization Projects.
REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TCISINFORMATION

COMPOSITION: [SpaceBenefits | NewTechnologyReport | Innovator | ContractGrant | Organization | ResearchTechnologyResume | RTOP | TechnologyUtilizationProject | ContractPotentialReportableItem | ContractCorrespondenceLetter]

DEFINITION: TCIS INFORMATION is a consolidation of data stores where information related to new technology is accumulated. This data store includes information about New Technology Report, space benefits, projects, innovators, research plans and contracts.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

NAME: TCISOutputInformation

COMPOSITION: [SearchSelectResults | Correspondence | Report | CorrespondenceStatus | ReportGenerationStatus | UpdateStatus | SortResults]

DEFINITION: TCIS Output Information is output data formatted for use by the USER. This includes formatted data for display, report, error messages and update messages.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model
ANALYSIS(STORE) TCIS Process Model

NAME: TCISUpdate

COMPOSITION: [CPRIReportDateUpdt | CPRITitleUpdt | CPRILetterDateUpdt | CPRILetterTypeUpdt | CPRILetterGeneratedUpdt | NTRTitleUpdt | NTRDscrptnUpdt | NTROriginUpdt | NTRRatingClassUpdt | NTRReleaseUpdt | NTRDateUpdt | NTR evaluatorUpdt | NTRDateToEvaluatorUpdt | NTRDateToInnovatorUpdt | NTRPatentStatusUpdt | NTRInnovationAbstractUpdt | NTRTechBriefUpdt | NTRDvlpmntStateUpdt | NTRKeyWordsUpdt | NTRPreparerNameUpdt | NTRPublishDcsnUpdt | NTRPublicationDataUpdt | NTRContractVrfctnUpdt | NTRTrackingPreparerNameUpdt | NTRTrackingPatentOffcRvwDateUpdt | NTRTrackingPatentOffcRspnsDateUpdt | NTRTrackingSRICosmicSendDateUpdt | NTRTrackingSRICosmicRtnDateUpdt | NTRTrackingSRICosmicAddtnlInfoDateUpdt | NTRTrackingSRICosmicReEvalRcvDateUpdt | NTRTrackingSRICosmicReClassUpdt | NTRTrackingCosmicLibRemoveDateUpdt | NTRTrackingCosmicTechBriefDateUpdt | NTRTrackingInnovatorNotfctnDateUpdt | NTRTrackingTTANotfctnDateUpdt | NTRTrackingReconNumUpdt | NTRTrackingTUORcvDateUpdt | NTRTrackingPubRqstDateUpdt | NTRTrackingTBTWICTDateUpdt | NTRTrackingFinalTBICTDateUpdt | NTRTrackingTSPStartDateUpdt | NTRTrackingDateFromEvaluatorUpdt | NTRTrackingTUOReturnDateUpdt | NTRTrackingSRICOSMICClassfctnUpdt | NTRTrackingFinalClassfctnDateUpdt | NTRTrackingPubRqstCntrctDateUpdt | NTRTrackingTBInnovatorDateUpdt | NTRTrackingCameraCopyDateUpdt | NTRTrackingTSPAvailUpdt | NTRTrackingPubRqstPatentOffcDateUpdt | NTRTrackingPROClauseUpdt | NTRTrackingPatentRghtsWaiveUpdt | NTRTrackingContrRetainPatentRghtsUpdt | NTRTrackingPubRqstToContrDateUpdt | NTRTrackingPubDcsnFrContrDateUpdt | SpaceBenefitsTitleUpdt | SpaceBenefitsSummaryUpdt | SpaceBenefitsNatureUpdt | SpaceBenefitsRevenueUpdt | SpaceBenefitsCostUpdt | SpaceBenefitsCompanyNameUpdt | SpaceBenefitsCompanyAddrUpdt | SpaceBenefitsCompanyPhoneNumUpdt | SpaceBenefitsContactPersonUpdt | SpaceBenefitsTypeBenefitUpdt | SpaceBenefitsPatentUpdt | SpaceBenefitsTechAsstnceUpdt | SpaceBenefitsTotalValueUpdt |

SpaceBenefitsInvestmentUpdt | SpaceBenefitsKeyWordsUpdt |
 SpaceBenefitsSourceUpdt | SpaceBenefitsLitryRfrnceUpdt |
 SpaceBenefitsInfoCntntRevUpdt | SpaceBenefitsCorpReleaseApprvlDtUpdt |
 SpaceBenefitsAuthorityUpdt | SpaceBenefitsProprietaryDataUpdt |
 SpaceBenefitsUserTypeUpdt | SpaceBenefitsBusinessTypeUpdt |
 SpaceBenefitsEmployeeNumUpdt | SpaceBenefitsSICNumUpdt |
 SpaceBenefitsUserLocationUpdt | SpaceBenefitsFirstNASACntctUpdt |
 SpaceBenefitsReferralUpdt | SpaceBenefitsNotesUpdt |
 SpaceBenefitsUseNASAAgainUpdt | ContractGrantAwardDateUpdt |
 ContractGrantCompleteDateUpdt | ContractGrantAmountUpdt | ContractGrantTitleUpdt |
 ContractGrantTypeUpdt | ContractGrantDateEnteredUpdt | ContractGrantCloseDateUpdt |
 | ContractGrantNTClauseUpdt | ContractGrantNTClauseDateUpdt |
 ContractGrantPRCOClauseUpdt | ContractGrantPRCOClauseDateUpdt |
 ContractGrantPatentClauseUpdt | ContractGrantSBIRContractUpdt |
 ContractGrantFinalNTRReportUpdt | ContractGrantFinalNTRReportApplDateUpdt |
 ContractGrantCloseOutUpdt | ContractGrantCntrctOffcrNameUpdt |
 ContractGrantCntrctOffcrMailCodeUpdt | ContractGrantTechRepNameUpdt |
 ContractGrantTechRepMailCodeUpdt | ContractGrantTechRepWorkDivisionUpdt |
 ContractGrantPointOfContactNameUpdt | ContractGrantPointOfContactPhoneUpdt |
 ContractGrantInitialLetterFlagUpdt | ContractGrantInterimReportFlagUpdt |
 ContractGrantComplianceLetterFlagUpdt | ContractGrantSpecificItemsFlagUpdt |
 ContractGrantFinalReportReminderUpdt | InnovatorNameUpdt | InnovatorEmployerUpdt |
 | InnovatorEmployerTypeUpdt | InnovatorDeptUpdt | InnovatorAddressUpdt |
 InnovatorPhoneNumUpdt | OrganizationTitleUpdt | OrganizationSectionUpdt |
 OrganizationBranchUpdt | OrganizationDivisionUpdt | OrganizationTypeUpdt |
 OrganizationMailCodeUpdt | TechnologyUtilizationProjectTopicUpdt |
 TechnologyUtilizationProjectTitleUpdt | TechnologyUtilizationProjectAbstractUpdt |
 TechnologyUtilizationProjectCentrNamUpdt |
 TechnologyUtilizationProjectTUONameUpdt |
 TechnologyUtilizationProjectPhoneNumUpdt |
 TechnologyUtilizationProjectFundStatUpdt |
 TechnologyUtilizationProjectNASAFundUpdt |
 TechnologyUtilizationProjectProblemsUpdt | TechnologyUtilizationProjectAcmplshUpdt |
 | TechnologyUtilizationProjectActvtPlanUpdt |
 TechnologyUtilizationProjectFsblStdyUpdt | TechnologyUtilizationProjectCntrtAwdUpdt |
 | TechnologyUtilizationProjectPrtDvDtUpdt | TechnologyUtilizationProjectOptmzDtUpdt |
 | TechnologyUtilizationProjectFldLabDtUpdt |
 TechnologyUtilizationProjectFnlRptDtUpdt |
 TechnologyUtilizationProjectCmrlnDtUpdt | TechnologyUtilizationProjectCmpltDtUpdt |
 | ContractCorrespondenceLetterDateUpdt | ContractCorrespondenceLetterTypeUpdt |
 ContractCorrespondenceLetterSspnDateUpdt |
 ContractCorrespondenceLtrSuspnFlwDtUpdt |
 ContractCorrespondenceLetterFolDateUpdt |
 ContractCorrespondenceLetterRspsDateUpdt |
 ContractCorrespondenceLetterCorYearUpdt |
 ContractCorrespondenceLetterCommentsUpdt |
 ContractCorrespondenceLetterBodyUpdt | RTRTitleUpdt | RTRRfmcNotesUpdt |
 RTRDscrptnUpdt | RTOPSubjectUpdt | RTOPTitleUpdt | RTOPAccessionNumUpdt |
 RTOPOrganizationUpdt | RTOPAbstractUpdt | RTOPContactNameUpdt |
 RTOPContactPhoneNumUpdt]

DEFINITION: A TCIS Update is a new or modified data element update to TCIS.

Included in TCIS Updates is data relating to New Technology reporting, space benefits, projects, innovators, research plans and contracts.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TCISUploadData

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TechnologyUtilizationProject

COMPOSITION: *TechnologyUtilizationProjectID +

TechnologyUtilizationProjectTopic + TechnologyUtilizationProjectTitle +

TechnologyUtilizationProjectAbstract + TechnologyUtilizationProjectCenterName +

TechnologyUtilizationProjectTUOName + TechnologyUtilizationProjectPhoneNum +

TechnologyUtilizationProjectFundStatus + TechnologyUtilizationProjectNASAFund +

TechnologyUtilizationProjectProblems + TechnologyUtilizationProjectAccmplshmnt +

TechnologyUtilizationProjectActvtsPlan + TechnologyUtilizationProjectFsbiltyStdy +

TechnologyUtilizationProjectCntrctAwdDat +

TechnologyUtilizationProjectPrtypDevDate + TechnologyUtilizationProjectOptmztnDate

+ TechnologyUtilizationProjectFldLabDate + TechnologyUtilizationProjectFinalRprtDat

+ TechnologyUtilizationProjectCmrclztnDate + TechnologyUtilizationProjectCmpltDate

+ TechnologyUtilizationProjectFundingFY + TechnologyUtilizationProjectTechnCntct +

TechnologyUtilizationProjectDateLstChngd + TechnologyUtilizationProjectReleaseCntrl

+ TechnologyUtilizationProjectDteToCentral +

TechnologyUtilizationProjectStatusAsOfDt + TechnologyUtilizationProjectApprvdStrtDt

+ TechnologyUtilizationProjectOtherFunds + @RTOPNum + @OrganizationCode +

@NTRControlNum

DEFINITION: A Technology Utilization Project applies NASA technology to address a need in the marketplace. Information can be obtained about such projects to facilitate rapid transfer of new information and assist all Technology Utilization members in remaining alert to emerging technologies.

REFERENCES: ANALYSIS(STORE) TCIS Process Model

ANALYSIS(FLOW) TCIS Process Model

ERD(ENTITY) TCIS-LOCAL Info Model

NAME: TechnologyUtilizationProjectAbstract

COMPOSITION:

DEFINITION: A description of the nature of the Active Project.

REFERENCES:

NAME: TechnologyUtilizationProjectAbstractUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectAccmplshmnt

COMPOSITION:

DEFINITION: Notes which inform the Project Manager of the Technology Utilization Project's status.

REFERENCES:

NAME: TechnologyUtilizationProjectAcmplshUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectActvtPlanUpd
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectActvtsPlan
COMPOSITION:
DEFINITION: A description of the planned activities for the next quarter.
REFERENCES:

NAME: TechnologyUtilizationProjectApprvdStrtDt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectCenterName
COMPOSITION:
DEFINITION: The name of the center responsible for the project.
REFERENCES:

NAME: TechnologyUtilizationProjectCentrNamUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectCmpltDate
COMPOSITION:
DEFINITION: The actual date of project completion.
REFERENCES:

NAME: TechnologyUtilizationProjectCmpltDtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectCmrlztznDate
COMPOSITION:
DEFINITION: Contains the planned and actual dates of the commercialization.
REFERENCES:

NAME: TechnologyUtilizationProjectCmrltnDtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectCntrectAwdDat
COMPOSITION:
DEFINITION: Contains the planned and actual dates of Contract award.
REFERENCES:

NAME: TechnologyUtilizationProjectCntrtAwdUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectDateLstChngd
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectDteToCentral
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFinalRprtDat
COMPOSITION:
DEFINITION: Contains the planned and actual dates of the Final Report.
REFERENCES:

NAME: TechnologyUtilizationProjectFldLabDate
COMPOSITION:
DEFINITION: Contains the planned and actual dates of the Field/lab demonstration/implementation.
REFERENCES:

NAME: TechnologyUtilizationProjectFldLabDtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFnlRptDtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFsblStdyUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFsbltyStdy
COMPOSITION:
DEFINITION: Contains the planned and actual dates of the Feasibility Study.
REFERENCES:

NAME: TechnologyUtilizationProjectFundingFY
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFundStatUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectFundStatus
COMPOSITION:

DEFINITION: The current state (planning, analysis, design, implementation, test, maintenance, etc.) of the active project.

REFERENCES:

NAME: TechnologyUtilizationProjectID

COMPOSITION:

DEFINITION: The unique identifier assigned to the Technology Utilization Project. Also a referential attribute which formalizes the relationship between Technology Utilization Project and New Technology Report.

REFERENCES:

NAME: TechnologyUtilizationProjectNASAFund

COMPOSITION:

DEFINITION: Contains the cumulative amount of NASA funding for the Technology Utilization Project.

REFERENCES:

NAME: TechnologyUtilizationProjectNASAFundUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectOptmzDtUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectOptmztnDate

COMPOSITION:

DEFINITION: Contains the planned and actual dates of the Hardware or Software optimization.

REFERENCES:

NAME: TechnologyUtilizationProjectOtherFunds

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectPhoneNum

COMPOSITION:

DEFINITION: The telephone number of the center which is responsible for implementing the Active Project.

REFERENCES:

NAME: TechnologyUtilizationProjectPhoneNumUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TechnologyUtilizationProjectProblems

COMPOSITION:

DEFINITION: Contains a synopsis of the problem that was solved by the New Technology item.

REFERENCES:

NAME: TechnologyUtilizationProjectProblemsUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectPrtdvdtUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectPrtypDevDate
COMPOSITION:
DEFINITION: Contains the planned and actual dates of the Prototype development.
REFERENCES:

NAME: TechnologyUtilizationProjectReleaseCntrl
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectStatusAsOfDt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectTechnCntct
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectTitle
COMPOSITION:
DEFINITION: The official title of the Active Project.
REFERENCES:

NAME: TechnologyUtilizationProjectTitleUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectTopic
COMPOSITION:
DEFINITION: Contains the topic or category under which the Technology Utilization Project falls.
REFERENCES:

NAME: TechnologyUtilizationProjectTopicUpdt
COMPOSITION:
DEFINITION:
REFERENCES:

NAME: TechnologyUtilizationProjectTUOName
COMPOSITION:

DEFINITION: The name of the Technology Utilization Officer at the center which is implementing the Active Project.

REFERENCES:

NAME: TechnologyUtilizationProjectTUONameUpdt

COMPOSITION:

DEFINITION:

REFERENCES:

NAME: TRACKCORRESPONDENCE

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: TransferCriteria

COMPOSITION:

DEFINITION: Identifies the direction of data transfer, data conversion format and data to be transferred.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TransferStatus

COMPOSITION:

DEFINITION: Contains the error condition status of the data transfer process.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: TRANSFERTCISINFORMATION

COMPOSITION:

DEFINITION: This process provides for transfer of TCIS data between TCIS-LOCAL and TCIS-CENTRAL. It receives New Technology, New Technology Evaluation, Technology Utilization Project and Space Benefits data from TCIS INFORMATION data store. It then reformats this data to prepare it for transmission and transfers it to TCIS-CENTRAL via the TCIS Upload Data message. It also receives a TCIS Download Data message from the TCIS-CENTRAL entity. It strips this data of overhead information and outputs it to writes it to the TCIS INFORMATION data store.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: UPDATECORRESPONDENCECONFIGURATION

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: UpdateCriteria

COMPOSITION:

DEFINITION: Indicates whether the update is to be a new entry, modified entry or deletion. This message invokes the appropriate update process, i.e. create, modify or delete.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: UpdatesFromTCIS-CENTRAL

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: UpdateStatus

COMPOSITION: [InstanceCreationStatus | ModifyInstanceStatus | InstanceDeletionStatus | EntryValidationStatus]

DEFINITION: This data flow informs the USER of the status of the create, modify and delete processes. These messages include mandatory attribute entry messages, out-of-range messages and messages that prompt the USER as to the success or failure of the update.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: UPDATETCISINFORMATION

COMPOSITION:

DEFINITION: The UPDATE TCIS INFORMATION process adds, deletes and updates TCIS data. It receives TCIS Updates, Update Criteria and data from the TCIS INFORMATION data store. This process validates updates by performing range checking, permitted-value and excluded-value checking. It assigns a unique identifier to each valid new entry. UPDATE TCIS INFORMATION verifies that related data stores have been updated with related information. For example, if a New Technology data store is being updated due to a NASA-funded Contract or Grant, this process ensures that the Contract or Grant data store contains the related Contract or Grant information. The UPDATE TCIS INFORMATION process outputs updates to the TCIS INFORMATION data store. It also outputs a Update Status Message to inform the USER of the status of the data update process.

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: USER

COMPOSITION:

DEFINITION: A USER is one who utilizes TCIS to input, maintain, view, and browse TCIS information. USERS issue commands to TCIS to control its data input, search, view and report generation functions. USERS include Technology Utilization (TU) Coordinators, TU Officers, TU Office Staff, Technology Counselors, IAC Directors, IAC Staff, Centers for Commercialization of Space, Headquarters TU Staff, Tech Brief Evaluation Contractor, Tech Brief Preparation Contractor, SRI Facility Contractor, TU Support Contractor and CCDS Contractor.

REFERENCES: ANALYSIS(EXTERNAL) TCIS Process Model

NAME: UserUpdates

COMPOSITION: [TCISUpdate | SearchAttributeName | SearchOperator | SearchValue | ReportGenerationCriteria | CorrespondenceGenerationCriteria | SelectCriteria | EntityAttributeName | EntityType | SortType | UpdateCriteria | TransferCriteria | TransferStatus]

DEFINITION: UserInputData are updates provided to TCIS-LOCAL by the USER. UserInputData includes information about NewTechnology, Space Benefits, Organizations, New Technology Evaluations, TU Team Members, Innovators, Contracts and Grants, Contractors and Grantees, Technical Transfer Agents, In-House Potential New Technologies, Research Technical Resumes, Research Technology Operating Plans, Technical Inquiries, Technical Inquiry Responses, Technology Utilization Projects and Technology Experts.

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: ValidatedInstanceUpdate

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: ValidatedNewInstance

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(FLOW) TCIS Process Model

NAME: VALIDATEENTRY

COMPOSITION:

DEFINITION:

REFERENCES: ANALYSIS(PROCESS) TCIS Process Model

NAME: Writes

COMPOSITION:

DEFINITION: Organizations write Research Technical Resumes to obtain funding for Technology Utilization Projects. A single Organization may write several Research Technical Resumes, while a single Research Technical Resume can be written by only one Organization. This is a 1:M relationship and is formalized by the referential attribute OrganizationCode located in the Research Technical Resume entity.

REFERENCES: ERD(RELATION) TCIS-LOCAL Info Model

TCIS-LOCAL PRIMITIVE DESCRIPTIONS

In an attempt to generate a specification that is rigorous and can stand the test of time, an effort has been made to avoid implementation-dependent terminology throughout the document. This is an especially important issue since TCIS will be implemented in different environments involving different operating systems, DBMSs and platforms. Therefore, the use of terms such as file, record, table, memory, etc. has been limited to allow the software designer the freedom to design the system in a manner which optimizes use of the chosen implementation architectures. Furthermore, the definitions of these implementation-dependent terms differ among languages and DBMSs, creating further confusion, e.g. a file in one language may be a record in another.

Instead, implementation-independent terms such as entity, instance, and attribute are used extensively throughout the document to avoid imposing limitations on the designers as well as to avoid confusion that might result from different implementations.

An entity is an abstraction of a set of real-world things that share the same characteristics. Simply stated, an entity is a collection of data items in the information system that is a reflection of something in the real world. NTR, Innovator and Contract are examples of entities. An entity may be represented in one implementation language as a record; in another language, it may be represented as a file. An entity is composed of attributes. An attribute is a single characteristic possessed by an entity, or a data element that helps define the entity. An attribute may take on different values, thus describing the characteristics of a specific entity. Attributes are typically represented as fields in a database structure. Examples of TCIS attributes include Contract number, NTR abstract, or Innovator Code. An instance is a single or individual real-world thing. In most language or database implementations, a single instance may be represented as a record.

GENERATE DETAILED REPORT (Process 1.1)

General Description:

The GENERATE DETAILED REPORT process constructs a report based on the complete information of a specific entity. It generates a listing of all instances which compose the entity. Detailed reports are provided for the purpose of examining information specific to a single entity. A detailed report may be generated from data received from the TCIS INFORMATION data store, the sort process, the search process or the correspondence tracking process.

Inputs:

This process shall receive a *Report Generation Criteria* message which identifies the type of report to be generated and contains the name of the entity for which the report will be generated. It shall receive a *TCIS Data* message containing the instances of the entity being reported. It shall receive a *Sort Results* and *Search or Select Results* message containing data from the search, select or sort processes.

This process shall also receive a *Correspondence Status* message containing the status of the correspondence tracking process.

Processing:

Upon receipt of the *Report Generation Criteria* message containing the value "Detailed Report" and the name of the entity to be reported, the GENERATE DETAILED REPORT process shall retrieve a *TCIS Data* message from the TCIS INFORMATION data store. This message will

contain all instances which compose the named entity. This process shall format the data contained in this message into report of all instances and their associated attribute values. This process shall generate a *Report Generation Status* message identifying the status (e.g. in-process or error conditions) of the report generation procedure. This process shall output the *Report Generation Status* message for review by the User. Upon completion of the report generation process, the GENERATE DETAILED REPORT process shall generate a *Report* message containing all occurrences of instances and attributes for the named entity.

Upon receipt of a *Report Generation Criteria* message identifying that the report is to be generated based on the sort, search or correspondence tracking operation, this process shall receive the appropriate *Sort Results* message containing the results of the sort operation, or *Search or Select Results* message containing the results of a search operation, or *Correspondence Status* message containing correspondence tracking data. This process shall use the received message to compile a report of all instances along with their associated attributes. This process shall generate a *Report Generation Status* message identifying the status (e.g. in-process or error conditions) of the report generation procedure. This process shall output the *Report Generation Status* message. Upon completion of the report generation procedure, the GENERATE DETAILED REPORT process shall generate a *Report* message containing the reformatted information. It shall output this message to the User.

Outputs:

This process shall return a *Report* message containing the results of the report operation. It shall also return a *Report Generation Status* message which identifies the status of the report generation process.

GENERATE SUMMARY REPORT (Process 1.2)

General Description:

The GENERATE SUMMARY REPORT process constructs a report based on related entities within the TCIS INFORMATION data store. Summary reports are generated for the purpose of providing information that reflects the relationship between entities. For example, a report could be generated to provide information about the relationship between an NTR and the Contract/Grant that stimulated the NTR. Such a report could contain a listing of all NTRs which were stimulated by a particular Contract/Grant. The NTR data would be extracted from the NTR entity, whereas the Contract/Grant data related to the NTRs would be extracted from the Contract/Grant entity.

Inputs:

This process shall receive a *Report Generation Criteria* message which identifies the type of report to be generated and contains the name of the entity for which the report will be generated. It shall receive a *TCIS Data* message containing selected instances from those entities from which data is being extracted to generate the report.

Processing:

Upon receipt of a *Report Generation Criteria* message containing the value "Summary Report" and containing an indication of the type of summary report to be generated (e.g. NTR/Contract Summary Report), the GENERATE SUMMARY REPORT process shall retrieve a *TCIS Data* message from the TCIS INFORMATION data store. This message shall consist of selected data from two or more different entities. This process shall formulate a report consisting of related data from the different entities. This process shall generate a *Report Generation Status* message identifying the status (e.g. in-process or error conditions) of the report generation procedure. It shall output the *Report Generation Status* message. Upon completion of the report generation procedure, the GENERATE SUMMARY REPORT process shall generate a *Report* message containing the newly formed related information. It shall output the *Report* message.

Outputs:

This process shall return a *Report* message containing the results of the summary report operation. It shall also return a *Report Generation Status* message which identifies the status of the report generation process.

TRANSFER TCIS INFORMATION (Process 2)

General Description:

This process provides for transfer of TCIS data between TCIS-LOCAL and TCIS-CENTRAL. It converts data to be put in in the proper format for the transfer process.

Inputs:

This process shall receive *TCIS Data* from the TCIS INFORMATION data store. This message will contain New Technology Reports, Technology Utilization Project data, Space Benefits data, or a combination of the three. It shall receive a *TCIS Download Data* message from TCIS-CENTRAL containing New Technology Reports, Technology Utilization Project data, Space Benefits data, or a combination of the three. It shall also receive a Transfer Criteria message identifying the direction of the transfer (i.e. to or from TCIS-LOCAL), identifying the data to be transferred and the format to be used to convert the data.

Processing:

Upon receipt of a Transfer Criteria message identifying 1) the data transfer direction as "from TCIS-LOCAL", 2) the data conversion format as "output format" and, 3) the data to be transferred; the TRANSFER TCIS INFORMATION process shall read the TCIS INFORMATION data store to retrieve a *TCIS Data* message. This process shall contain data conversion standards which convert internal TCIS information to a format for transfer to TCIS-CENTRAL. This process shall convert the *TCIS Data* message in accordance with the data conversion standard. It shall create a *TCIS Upload Data* message containing the converted data. It shall transfer this message to TCIS-CENTRAL

Upon receipt of a Transfer Criteria message identifying 1) the data transfer direction as "to TCIS-LOCAL", 2) the data conversion format as "input format" and, 3) the data to be transferred; the TRANSFER TCIS INFORMATION process shall receive a *TCIS Download Data* message. This process shall contain data conversion standards which convert incoming information to a format that is acceptable b TCIS-LOCAL. This process shall convert the *TCIS Download Data* message in accordance with the data conversion standard. It shall create a *TCIS Data* message containing the converted data. It shall write this message to the TCIS INFORMATION data store.

Outputs:

This process shall output a *TCIS Upload Data* message containing the reformatted New Technology Reports, Technology Utilization Project data, Space Benefits data, or a combination of the three. It shall also output a *TCIS Data* message containing reformatted New Technology Reports, Technology Utilization Project data, Space Benefits data, or a combination of the three. Finally, the TRANSFER TCIS INFORMATION process shall output a *Transfer Status* message containing the status of the transfer process.

SEARCH TCIS (Process 3)

General Description:

The SEARCH TCIS process provides for finding an instance or group of instances based on the values of one or more attributes. It finds information that meets criteria entered by the User. Searching is performed for the purpose of viewing (browsing), updating, performing calculations on information, or reporting. This process performs both simple (search involving one attribute) or

compound (search involving two or more attributes) searches.

Inputs:

This process shall receive a *Search Attribute Name* message containing the name of the attribute on which the search operation is to be performed, a *Search Operator* message indicating how to compare the contents of the attribute to a specified value, and a *Search Value* message containing the value to which each instance is compared. The *Search Operator* message will contain comparison operators such as (is equal to, less than, greater than, and, or, etc.).

The SEARCH TCIS process shall also receive a *Select Criteria* message containing criteria against which it will select an instance or group of instances. It shall also receive a *TCIS Data* message from the TCIS INFORMATION data store.

Processing:

Upon receipt of the *Search Attribute Name*, *Search Operator* and *Search Value* messages, the SEARCH TCIS process shall scan the instances in the TCIS INFORMATION data store in search of information that matches criteria established by the *Search Attribute Name*, *Search Operator* and *Search Value* messages. This process shall extract from the TCIS INFORMATION data store those instances that meet the criteria in the received messages. The extracted instances shall be in the form of the *TCIS Data* input message.

This process shall generate a *Search or Select Results* message containing the results of the search operation. This process shall output the *Search or Select Results* message for the purpose of viewing or reporting. This process shall generate a *Search Status* message containing the status of the search operation as it is in progress. The *Search Status* message may include, but not be limited to, search-in-progress status, instance-not-found status, or search operator error indication status.

Outputs:

This process shall return a *Search or Select Results* message which contains the results of the search or select operation. It shall also return a *Search Status* message containing the in-progress or error status of the search or select operation.

CREATE NEW INSTANCE (Process 4.1)

General Description:

The CREATE NEW INSTANCE process writes a new instance to the TCIS INFORMATION data store based on validated entries and an indication that the entry is an original data element. This process also automatically generates a new unique identifier for each new instance it writes to the TCIS INFORMATION data store.

Inputs:

The CREATE NEW INSTANCE process shall receive an *Update Criteria* message containing 1) an indication that a new instance is to be created and 2) the name of the entity for which the new instance is being created. It shall also receive a *Validated New Instance* message containing the validated data to be created.

Processing:

Upon receipt of the *Update Criteria* message and a *Validated New Instance* message, the CREATE NEW INSTANCE process shall compute a unique identifier for the new instance being created. This process shall construct a *TCIS Data* message containing the unique identifier along with the data from the *Validated New Instance* message. The CREATE NEW INSTANCE process shall contain criteria which determines the completion status (i.e. mandatory attributes) for the new instance being created. This criteria shall be based on mandatory data entry requirements established for the particular instance being created.

This process shall store the *TCIS Data* message in the TCIS INFORMATION data store. This process shall generate an *Instance Creation Status* message containing the status of the creation process. The *Instance Creation Status* message shall contain 1) information which communicates whether the entries for the instance being created is complete or incomplete, and 2) information which communicates whether a particular attribute is mandatory.

Outputs:

The CREATE NEW INSTANCE process shall output a *TCIS Data* message which contains the unique identifier for the instance being created appended to the instance message. It shall also output an *Instance Creation Status* message which indicates the completion status and mandatory entry status of the creation process.

MODIFY INSTANCE (Process 4.2)

General Description:

The MODIFY INSTANCE process changes information stored by TCIS in accordance with update information entered by the User.

Inputs:

The MODIFY INSTANCE process shall receive a *Validated Instance Update* message containing a verified data element. It shall also receive an *Update Criteria* message identifying the type (new, modify or delete) of update. This process shall receive a *TCIS Data* message containing the information to be modified.

Processing:

Upon receipt of a *Validated Instance Update* message and an *Update Criteria* message containing the modify notification, the MODIFY INSTANCE process shall read the TCIS INFORMATION data store to retrieve a *TCIS Data* message. This process shall replace the data contained within the *TCIS Data* message with the data contained within the *Validated Instance Update* message. This process shall generate a new *TCIS Data* message containing the revised information. This process shall write the new *TCIS Data* message to the TCIS INFORMATION data store. This process shall generate an *Instance Modification Status* message containing the status of the update process.

Outputs:

The MODIFY INSTANCE process shall output a *TCIS Data* message containing modified TCIS updates. It shall also output an *Instance Modification Status* message which indicates 1) the completion status of the update process and, 2) whether the modification is permitted on the particular instance or attribute.

DELETE INSTANCE (Process 4.3)

General Description:

The DELETE INSTANCE process removes information stored in by TCIS.

Inputs:

The DELETE INSTANCE process shall receive an *Update Criteria* message identifying the type of update being performed or confirmation to proceed with the delete procedure. It shall also receive an *TCIS Data* message containing the new information to be deleted by TCIS.

Processing:

Upon receipt of a *Update Criteria* message containing the delete instance notification, the

DELETE INSTANCE process shall read the TCIS INFORMATION data store to retrieve a *TCIS Data* message. This process shall generate an *Instance Deletion Status* message containing 1) the information to be deleted and, 2) a request that the User confirm the delete procedure. Upon receipt of an *Update Criteria* message containing a validation to proceed with the delete procedure, this process shall remove the information contained within the *TCIS Data* message from the TCIS INFORMATION data store.

Outputs:

The DELETE INSTANCE process shall output an *Instance Deletion Status* message which contains the data to be deleted, a request to proceed with the deletion procedure and the completion status of the deletion process.

VALIDATE ENTRY (Process 4.4)

General Description:

The VALIDATE ENTRY process determines the validity of the data entered by the User. It checks for proper data format (e.g. alphanumeric, integer, text, real, etc.), range values and permitted and excluded values.

Inputs:

The VALIDATE ENTRY process shall receive a *TCIS Update* message containing the value(s) of the attribute(s) being updated.

Processing:

Upon receipt of the *TCIS Update* message, the VALIDATE ENTRY process shall compare the value of the entered attribute to a pre-determined range of values established for that attribute to determine if the received value is within the pre-determined range. This process shall store the pre-determined range values against which attributes will be checked. It shall also store permitted values for selected attributes. The VALIDATE ENTRY process shall check attributes against the permitted values. This process shall create a *Validated New Instance* message containing the validated data to be written to the TCIS INFORMATION data store.

Outputs:

The VALIDATE ENTRY process shall output a *Validated New Instance* message containing validated data elements for a newly created instance. It shall output a *Validated Instance Update* containing the validated attribute to be modified.

SORT TCIS (Process 6)

General Description:

The SORT TCIS process changes the order of information within an entity according to criteria from the User and the values in the entity. This process sorts information in either ascending or descending order. It performs sorts on selected information or on entire entities. It also performs multilevel sorting of information, which means sorting information on various attributes within an instance of an entity.

Inputs:

This process shall receive an *Entity Attribute Name* message containing the name of the entity (table) and attribute (field) to be sorted. It shall also receive an *Entity Type* message identifying whether the entity being sorted is an entire entity or subset of selected instances within an entity. It

shall receive a *Sort Type* message specifying whether the sort operation is to be performed in ascending order or descending order.

It shall receive a *Search or Select Results* message containing the subset of instances, from a particular entity, on which the sort operation will be performed. Finally, this process shall receive a *TCIS Data* containing the complete set of instances on which it will perform the sort operation.

Processing:

Upon receipt of the *Entity Attribute Name* message, *Entity Type* message where *Entity Type* contains the value "File", and *Sort Type* message where the value of *Sort Type* indicates the direction of the sort (ascending or descending), this process shall read the TCIS INFORMATION data store to get a *TCIS Data* message containing data that is specific to the *Entity Attribute Name*.

Upon receipt of the an *Entity Type* message where *Entity Type* contains the value "Selected Instances", this process shall read the *Search or Select Results* message containing a group of selected instances from a specific entity.

This process shall generate a *Sort Results* message which echoes the name of the entity and attribute, or selected group of instances, being sorted. The *Sort Results* message shall also contain the sort direction. This process shall output the *Sort Results* message. This process shall place the data contained in the *TCIS Data* message in ascending or descending order based on the *Sort Type* indication and based on the values of the attributes in each instance of the message. It shall create a temporary Sorted-data store. It shall write the re-ordered data into the Sorted-data store. This process shall generate a new *Sort Results* message containing the results of the sort process. It shall output the new *Sort Results* message.

Outputs:

This process shall return a *Sort Results* message which echoes the sort criteria information (entity/attribute name, sort direction) and contains the results of the sort operation.

